SERVICE MANUAL

(without price)

ELECTRONIC CASH REGISTER

CE-300 (EX-247)

JANUARY 1997

Printer Model : MD-910

CASIO®

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1. SPECIFICATIONS

Power consumption

		120 V	220 V	230 V	240 V
In operation	Max.	0.28 A	0.17 A	0.16 A	0.15 A
	Stand by	0.14 A	0.09 A	0.08 A	0.07 A
Mode SW OFF	Max.	0.12 A	0.08 A	0.07 A	0.06 A

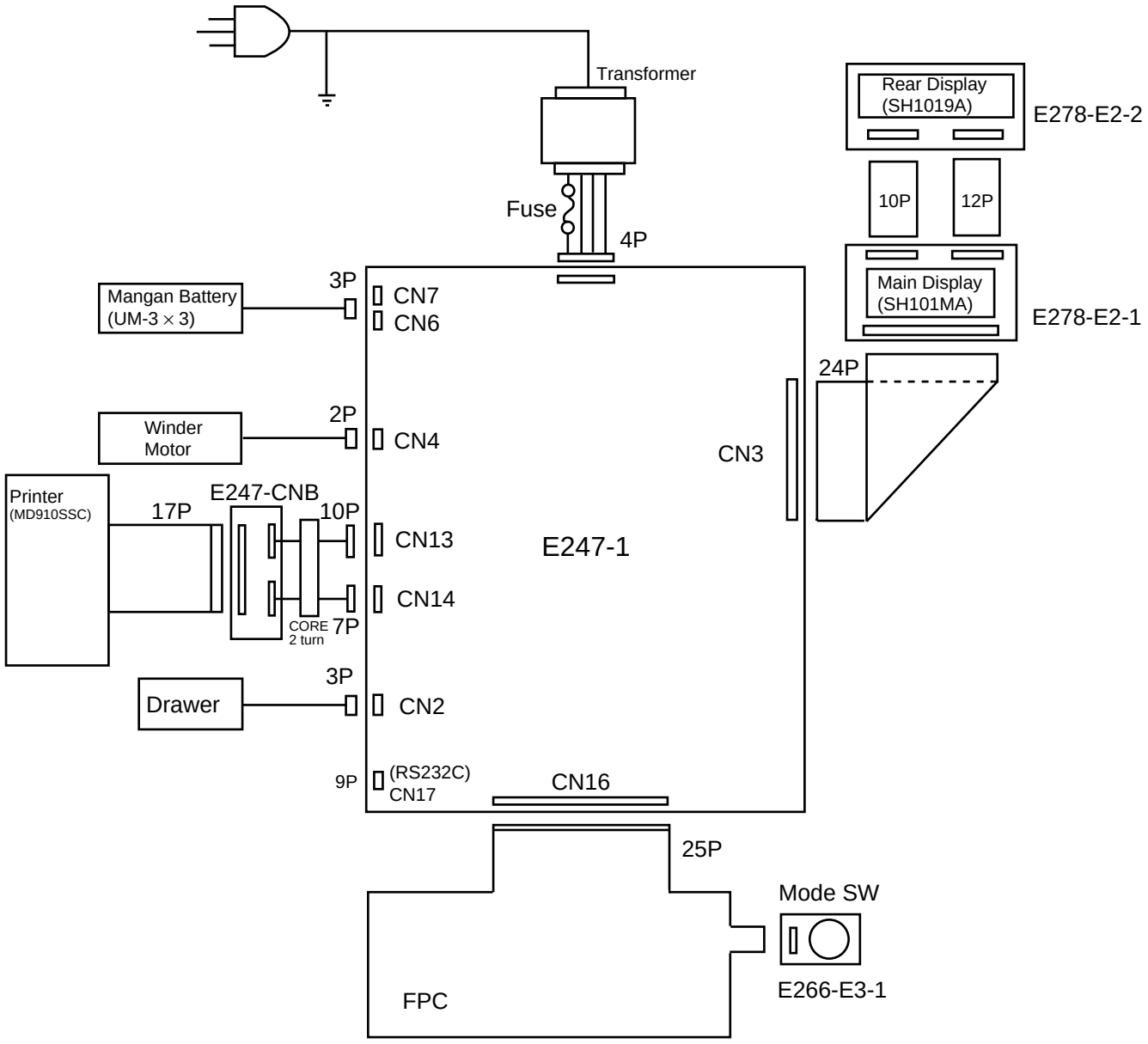
Memory protection	Backup battery	Mangan Battery UM-3 × 3 pcs.
	Backup period	1 year (25 °C)
	Battery life	Replace the battery every 1 year.
Memory capacity	32 KB	CXK58257AP-70/10L
Clock and calender	Accuracy	Within ±30 sec. per month (25 °C)
	Auto calender	Effective until 2099 A.D.
Environment	Operating temperature	0 °C ~ 40 °C
	Operating humidity	10 % ~ 90 %
	Storage temperature	-25 °C ~ 65 °C
	Storage humidity	10 % ~ 95 %
Printer	Model	MD-910-SSC
	Print method	Dot matrix printing
	Print digits	24 digits
	MCBF	1,500,000 lines
Ink cassette	Life	250,000 characters
Roll paper	Type	Fine-quality paper or Pressure-sensitive copy paper
	Size	57.5 ±0.5 mm
	Roll diameter	83 mm or less

2. INITIALIZE (MAC) OPERATION

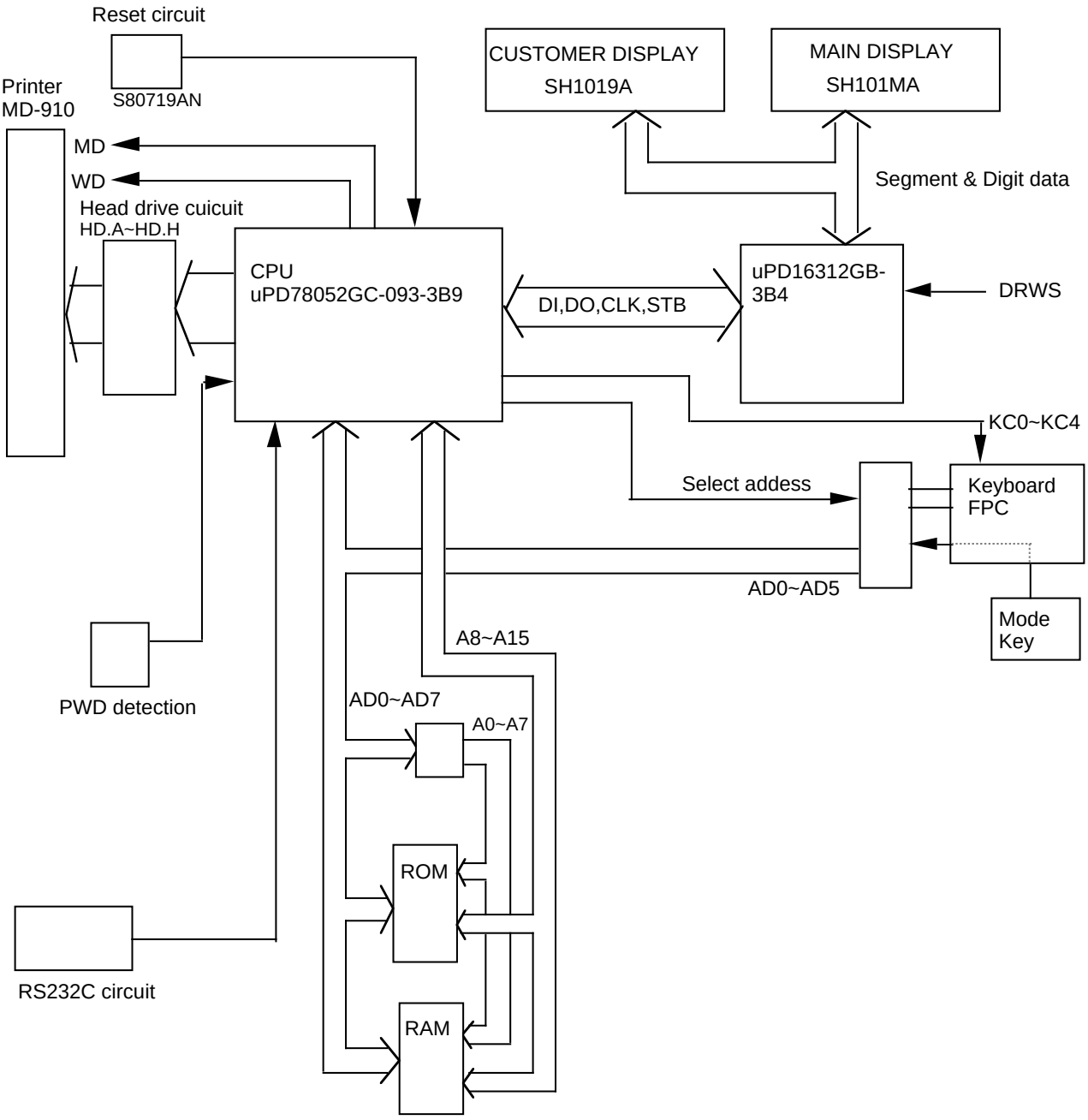
1. Set the mode switch to “OFF” position.
2. Pressing the “FEED” button and turn the mode switch to “PRG” position.
3. Release the “FEED” button.
4. Press “#2” key (Normally “SUB TOTAL” key).
5. Initialize operation is executed.

3. BLOCK DIAGRAM

3-1. PCB connection

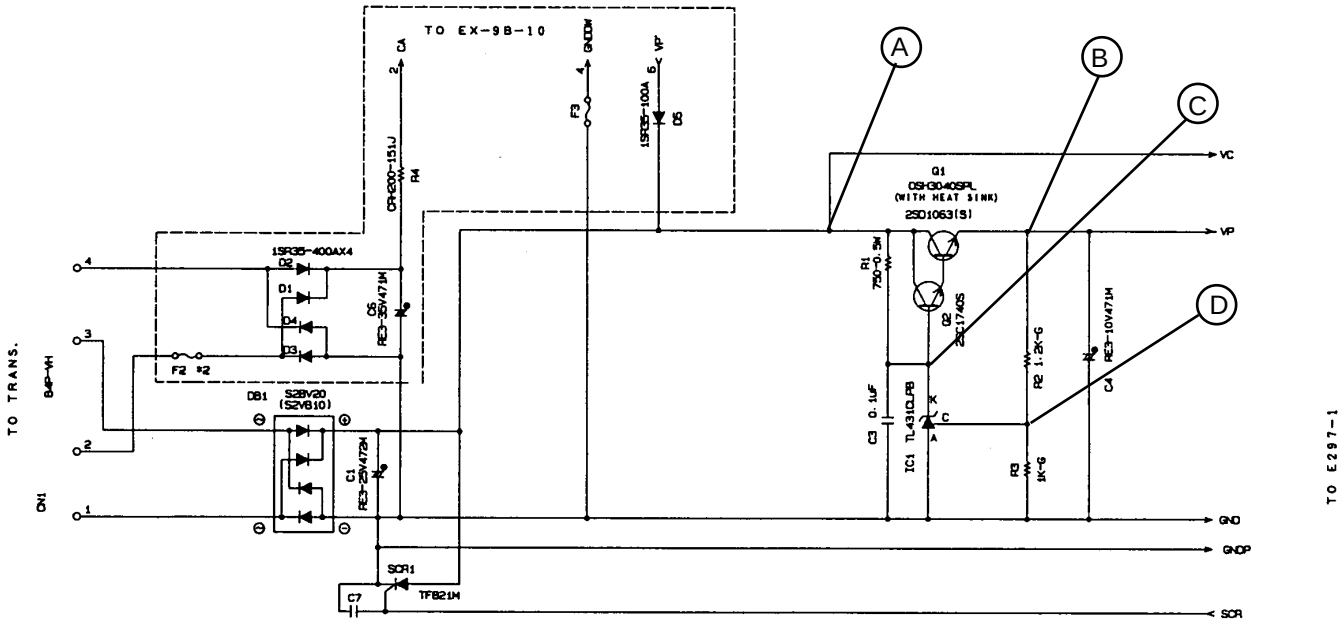


3-2. Block diagram (circuit)



4. CIRCUIT EXPLANATION

4-1. Power supply circuit



Q1: Power transistor
Q2: Voltage detection transistor

Voltage level at above check point (unit: V)

Measurement position	A	B	C	D
Voltage (V)	12.5V	5.3V	6.2V	2.47V

4-2. CPU (uPD78052GC-093-3B9)

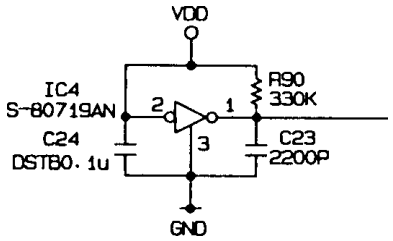
Pin No.	Signal	Description	In/Out	Status of Power On	Status of Power OFF
1	FB3	Not used	—	—	—
2	FB4	RAM bank 3	Out	High	High
3	FB5	RAM bank 4	Out	High	High
4	AVSS	GND	—	GND	GND
5	PGM	Not used	—	—	—
6	RAM	Chip select signal for RAM	Out	High	Low
7	AVREF	VDD	—	5 V	5 V
8	RXD	Receive data	In	High	High
9	TXD	Send data	Out	High	High
10	WD	Winder motor drive signal	Out	Low	Low
11	DI	Data signal from uPD16312	In	Pulse	High
12	DO	Data signal to uPD16312	Out	Pulse	High
13	CLK	Clock signal for uPD16312	Out	Pulse	High
14	STB	Data strobe signal for uPD16312	Out	Pulse	High
15	KC0	Key common signal (KC0)	Out	Pulse	High
16	KC1	Key common signal (KC1)	Out	Pulse	High
17	KC2	Key common signal (KC2)	Out	Pulse	High
18	KC3	Key common signal (KC3)	Out	Pulse	High
19	AD0	Address / Data signal (AD0)	In/Out	Pulse	High
20	AD1	Address / Data signal (AD1)	In/Out	Pulse	High
21	AD2	Address / Data signal (AD2)	In/Out	Pulse	High
22	AD3	Address / Data signal (AD3)	In/Out	Pulse	High
23	AD4	Address / Data signal (AD4)	In/Out	Pulse	High
24	AD5	Address / Data signal (AD5)	In/Out	Pulse	High
25	AD6	Address / Data signal (AD6)	In/Out	Pulse	High
26	AD7	Address / Data signal (AD7)	In/Out	Pulse	High
27	A8	Address signal (A8)	Out	Pulse	High
28	A9	Address signal (A9)	Out	Pulse	High
29	A10	Address signal (A10)	Out	Pulse	High
30	A11	Address signal (A11)	Out	Pulse	High
31	A12	Address signal (A12)	Out	Pulse	High
32	A13	Address signal (A13)	Out	Pulse	High
33	VSS	GND	—	GND	GND
34	A14	Address signal (A14)	Out	Pulse	High
35	A15	Address signal (A15)	Out	Pulse	High
36	INIT	PAD2 status	—	—	—
37	VPP	PAD1 status	—	—	—
38	DSR	Data set ready signal	In	High	High
39	KC4	Key common signal (KC4)	Out	Pulse	High
40	RD	Output enable signal of RAM/ROM (RD)	Out	Pulse	High
41	WR	Write enable signal of RAM (WR)	Out	Pulse	High
42	RA14	Address signal of ROM (Bank 0)	Out	High	High
43	ASTB	Latch enable for Address decoder (ASTB)	Out	Pulse	Low
44	KI12	Key input signal (KI12)	In	High	High
45	KI13	Key input signal (KI13)	In	High	High
46	RA16	Address signal of ROM (Bank2)	Out	High	High
47	RA15	Address signal of ROM (Bank 1)	Out	High	High
48	MD	Motor drive signal of printer (MD)	Out	Low	Low
49	DRW	Drawer drive signal (DRW)	Out	Low	Low
50	BUZ	Buzzer signal (BUZZ)	Out	Low	Low
51	FD	Paper feed signal of printer (FD)	Out	Low	Low
52	HD.A	Head drive signal of printer (HD.A)	Out	Low	Low
53	HD.B	Head drive signal of printer (HD.B)	Out	Low	Low
54	HD.C	Head drive signal of printer (HD.C)	Out	Low	Low
55	HD.D	Head drive signal of printer (HD.D)	Out	Low	Low

Pin No.	Signal	Description	In/Out	Status of Power On	Status of Power OFF
56	HD.E	Head drive signal of printer (HD.E)	Out	Low	Low
57	HD.F	Head drive signal of printer (HD.F)	Out	Low	Low
58	HD.G	Head drive signal of printer (HD.G)	Out	Low	Low
59	HD.H	Head drive signal of printer (HD.H)	Out	Low	Low
60	RESET	Reset signal (RESET)	In	High	High
61	DP	Dot pulse form printer (DP)	In	Low	High
62	RP	Reset pulse from printer (RP)	In	High	High
63	OFF	Mode key status (OFF)	Out	High	Low
64	PWD	Power down signal (PWD)	In	Low	High
65	RB0	Address signal for RAM (Bank 0)	Out	High	High
66	RB1	Address signal for RAM (Bank 1)	Out	High	High
67	RB2	Address signal for RAM (Bank 2)	Out	High	High
68	VDD	VDD	—	5 V	5 V
69	X2	System clock (5 MHz)	In	Pulse	High
70	X1	System clock (5 MHz)	In	Pulse	High
71	IC	GND	—	GND	GND
72	XT2	Sub system clock (32.768 KHz)	In	Pulse	Pulse
73	XT1	Sub system clock (32.768 KHz)	In	Pulse	Pulse
74	AVDD	VDD	—	5 V	5 V
75	AVREF0	VCC	—	GND	GND
76	BAT	Low battery signal	In	High	High
77	VPP.S	VPP detection signal (VPP.S)	In	Low	Low
78	FB0	Address signal of Fiscal ROM bank 0	Out	High	High
79	FB1	Address signal of Fiscal ROM bank 1	Out	High	High
80	FB2	Address signal of Fiscal ROM bank 2	Out	High	High

4-3. Display controller (uPD16312GB-3B4)

Pin No.	Signal	Description	In/Out	Status of Power On	Status of Power OFF
1	SW1	Not used (GND)	—	GND	GND
2	SW2	Not used (GND)	—	GND	GND
3	SW3	Not used (GND)	—	GND	GND
4	SW4	Not used (GND)	—	GND	GND
5	DOUT	Data out signal to CPU	Out	High	High
6	DIN	Data in signal from CPU	In	Pulse	High
7	VSS	GND	—	GND	GND
8	CLK	Clock signal (CLK)	In	Pulse	High
9	STB	Data strobe signal (STB)	In	Pulse	High
10	KEY1	Not used	—	—	—
11	KEY2	Not used	—	—	—
12	KEY3	Drawer sensor signal (DRW.S)	In	High	High
13	KEY4	VCC	—	5 V	5 V
14	VDD	VCC	—	5 V	5 V
15	SEG1	Display segment signal (Sa)	Out	Pulse	Low
16	SEG2	Display segment signal (Sb)	Out	Pulse	Low
17	SEG3	Display segment signal (Sc)	Out	Pulse	Low
18	SEG4	Display segment signal (Sd)	Out	Pulse	Low
19	SEG5	Display segment signal (Se)	Out	Pulse	Low
20	SEG6	Display segment signal (Sf)	Out	Pulse	Low
21	SEG7	Display segment signal (Sg)	Out	Pulse	Low
22	SEG8	Display segment signal (Sdp)	Out	Pulse	Low
23	SEG9	Display segment signal (Str)	Out	Pulse	Low
24	SEG10	Display segment common signal (Scom)	Out	Pulse	Low
25	SEG11	Not used		Low	Low
26	SEG12	Not used		Low	Low
27	VEE	Power for display (-VN)	—	-32 V	-32 V
28	GRD10	Display digit signal (G10)	Out	Pulse	Low
29	GRD9	Display digit signal (G9)	Out	Pulse	Low
30	GRD8	Display digit signal (G8)	Out	Pulse	Low
31	GRD7	Display digit signal (G7)	Out	Pulse	Low
32	GRD6	Display digit signal (G6)	Out	Pulse	Low
33	GRD5	Display digit signal (G5)	Out	Pulse	Low
34	GRD4	Display digit signal (G4)	Out	Pulse	Low
35	GRD3	Display digit signal (G3)	Out	Pulse	Low
36	GRD2	Display digit signal (G2)	Out	Pulse	Low
37	GRD1	Display digit signal (G1)	Out	Pulse	Low
38	VDD	VCC	—	5 V	5 V
39	LED4	Not used	—	Pulse	Low
40	LED3	Not used	—	Pulse	Low
41	LED2	Not used	—	Pulse	Low
42	LED1	Not used	—	Pulse	Low
43	VSS	GND	—	GND	GND
44	OSC	System clock (500 KHz)	In	Pulse	Pulse

4-4. Initilize IC (Reset circuit)

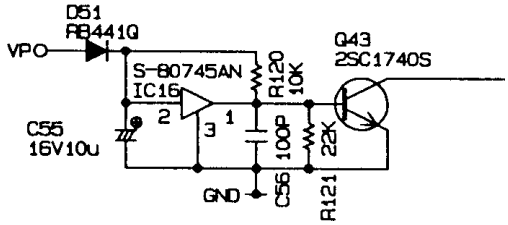


VDD: Voltage of memory protection battery

To Pin No.60 of CPU

When the voltage level at Pin No.60 of CPU is not stabilized, CPU does not work properly in rare case. Therefore, this machine uses the initialize IC for stabilizing the voltage.
Even the voltage level of VDD (Pin No.2) is changed, Pin No.1 of initilize IC outputs stabilized 5 volts. When the VDD voltage become less than 1.9 V, the initialize IC send a reset signal to CPU.

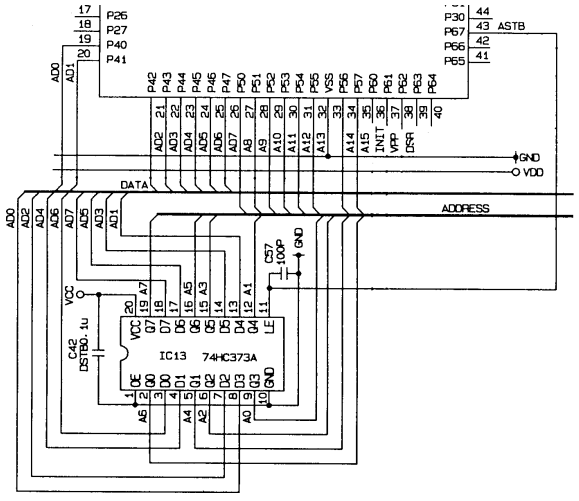
4-5. Power down detection circuit (PWD)



To Pin No.64 of CPU

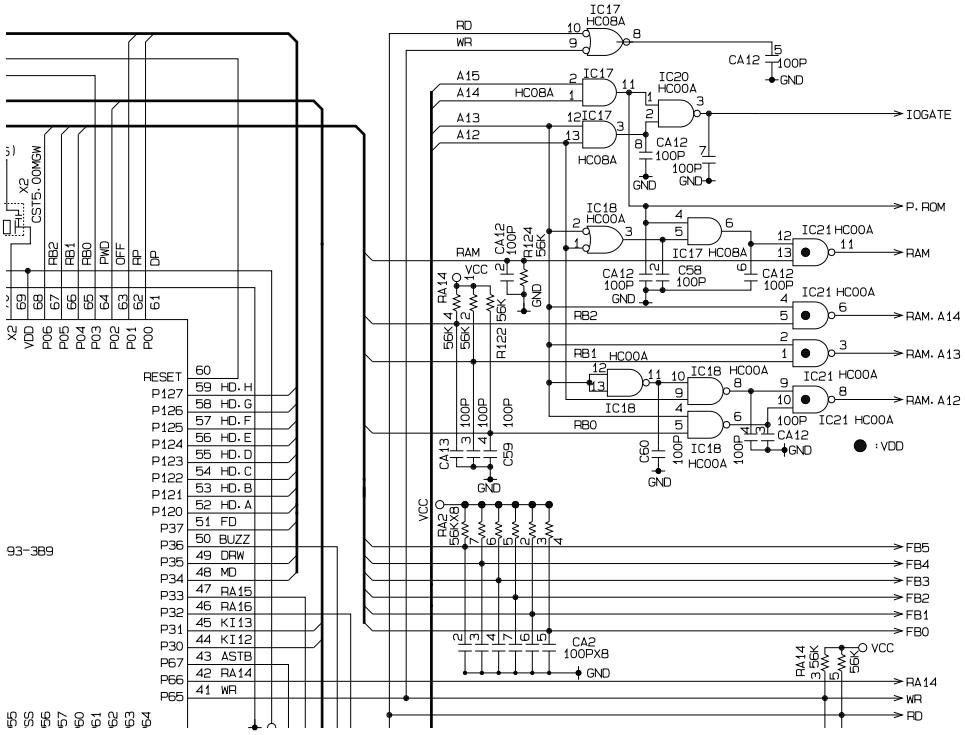
When the VP voltage become less than 4.8 V, the pin No.1 of IC5 become “Low” level.
Then,the transistor Q44 become OFF.
When Q44 become OFF, the voltage lebel of pin No.64 of CPU changes to “High” level from “Low”. Then, CPU knows power failure.

4-6. Address latch circuit



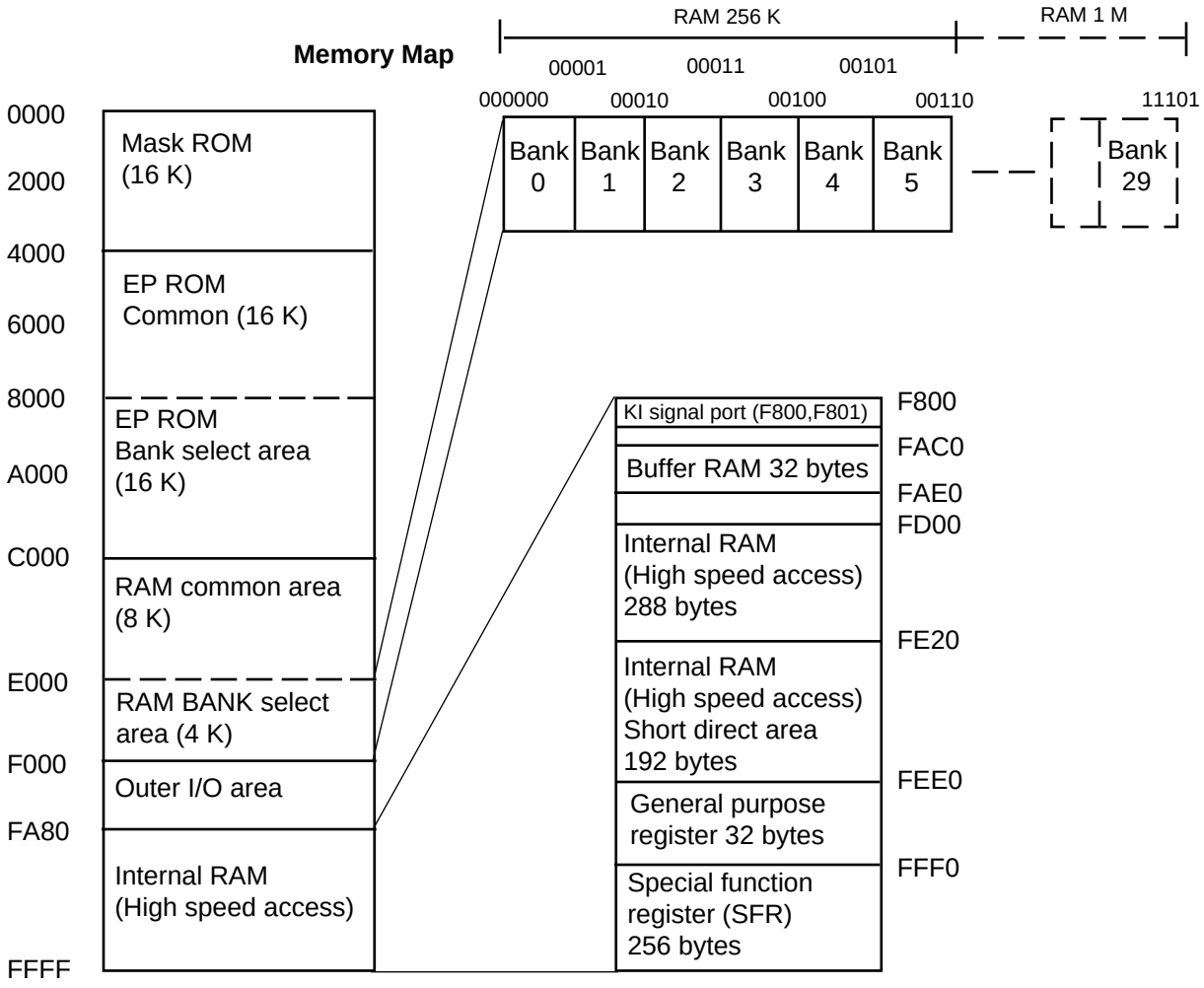
CPU uses 8 port (AD0 ~ AD7) for address bus and data bus.
To select the address, CPU use the IC13.
CPU send the address to IC13, and send ASTB signal at same time.
Then, IC13 store the address and output the address immediately.
In this way, CPU select the address and data signal.

4-7. RAM / ROM bank selection circuit

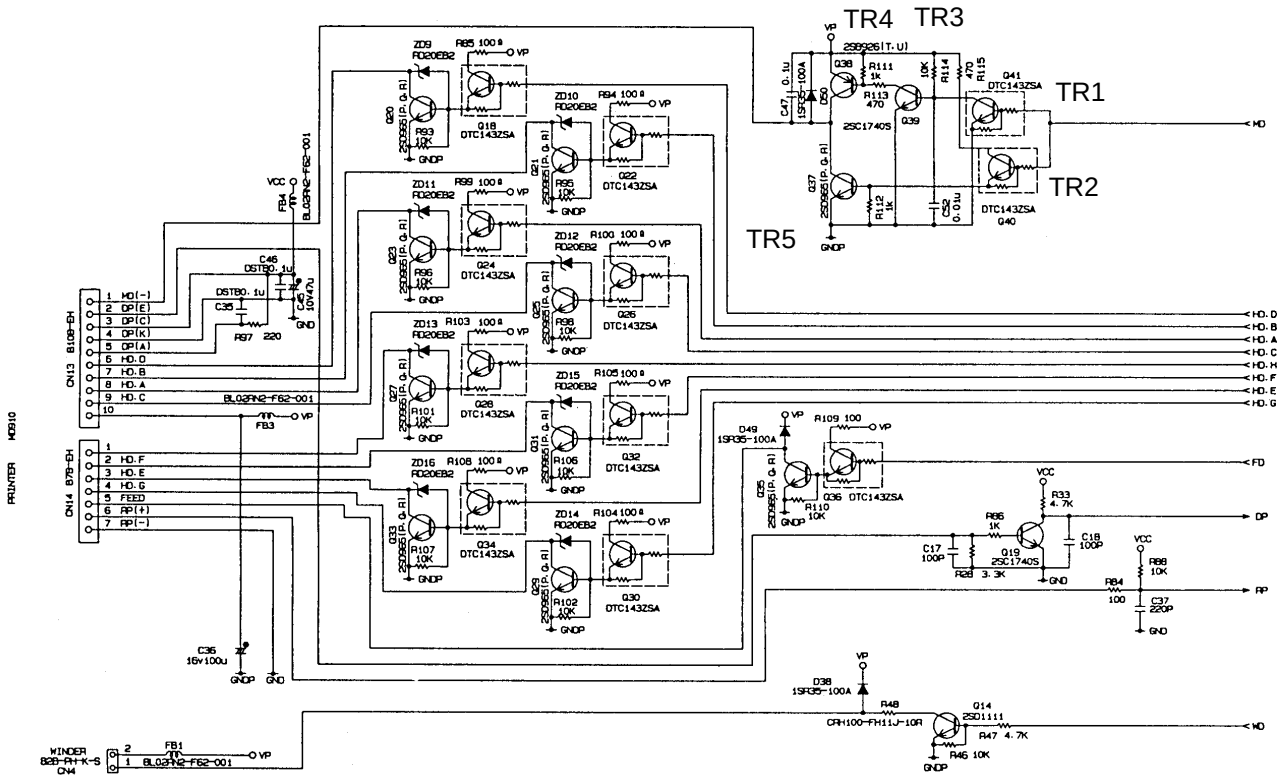


This circuit is used for address decoder for memory.

Memory Map



4-8. Head drive circuit for printer



Motor drive circuit

Normally, the transistor of motor drive circuit is followng condition.

TR1, TR2, TR5 :	OFF
TR3, TR4 :	ON
MD (-) signal :	VP level

When the CPU want to rotate the motor, CPU change the MD signal to “High” from “Low”. Then, TR1, TR2 and TR5 are become ON and MD (-) signal is become GND level, and then motor is rotated.

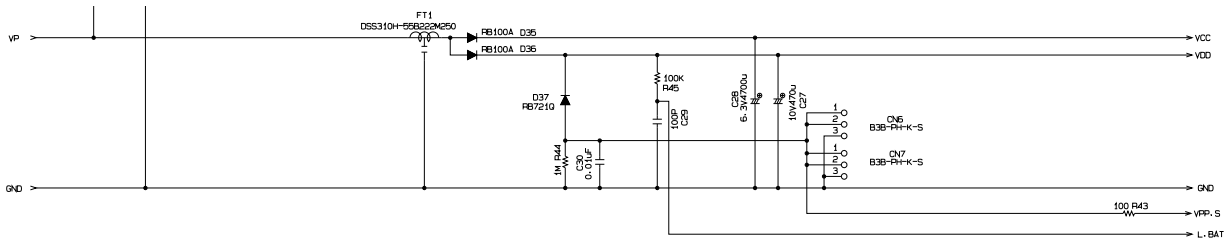
Head drive circuit

When the CPU wants to print, CPU send “High” signal from HD.A ~ HD.H terminal. This signal goes to printer unit, and then print.

RP: Reset pulse from printer
DP: Dot pulse from printer

4-9. VPP sensor circuit

Protection circuit



To prevent the circuit breakage, the protection circuit watches the voltage level of VCC, VDD and VPP.

When the each voltage level is more than following condition, this circuit cuts the voltage.

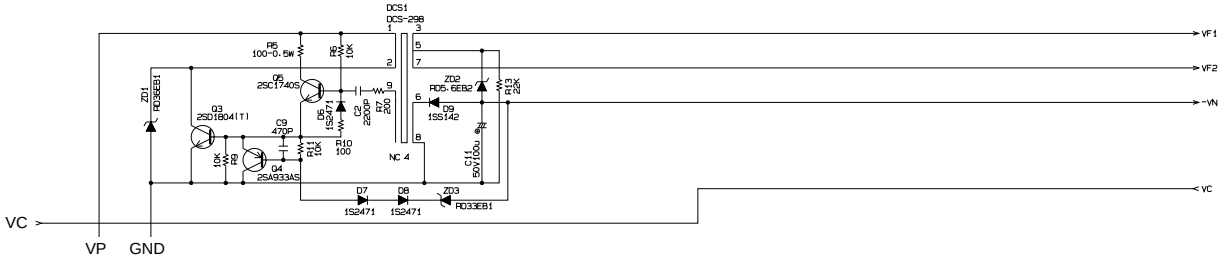
VCC,VDD: In case these voltages are become over voltage, this circuit outputs “SCR” signal(High signal) and burn out the fuse.

VPP: In case the VPP voltage is more than 15 V or less than 13.9 V, the “VPP.S” level is inverted and CPU cut the “VPP.ON” signal.

Detection voltage level (Unit: V)

VCC >= +6.5 V
VDD >= +6.5 V
+13.9 V =< VPP <=15.0 V

4-10. Power supply circuit for display



This circuit is making the power for display tube.

Voltage level:	-VN	Est. -31.2 V
	VF1 - VF2	Est. AC4.85 V

5. DIAGNOSTIC

5-1. To start the diagnostic program

1. Set the mode switch to “OFF” position.
2. Pressing the “FEED” button and turn the mode switch to “PRG” position.
3. Release the “FEED” button.
4. Input “9999900000” and press “ST” (“#2” key).
5. Diagnostic program is executed.

5-2. Check item

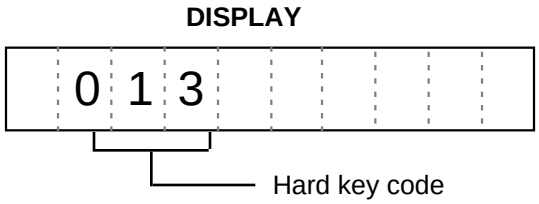
The following test can be checked in the diagnostic test.

1. Key code test
2. Switch status test
3. Individul function test.

5-3. Operation of each test

1. Key code test

When pressing a key, the machine displays the following key code.



HARD KEY CODE TABLE

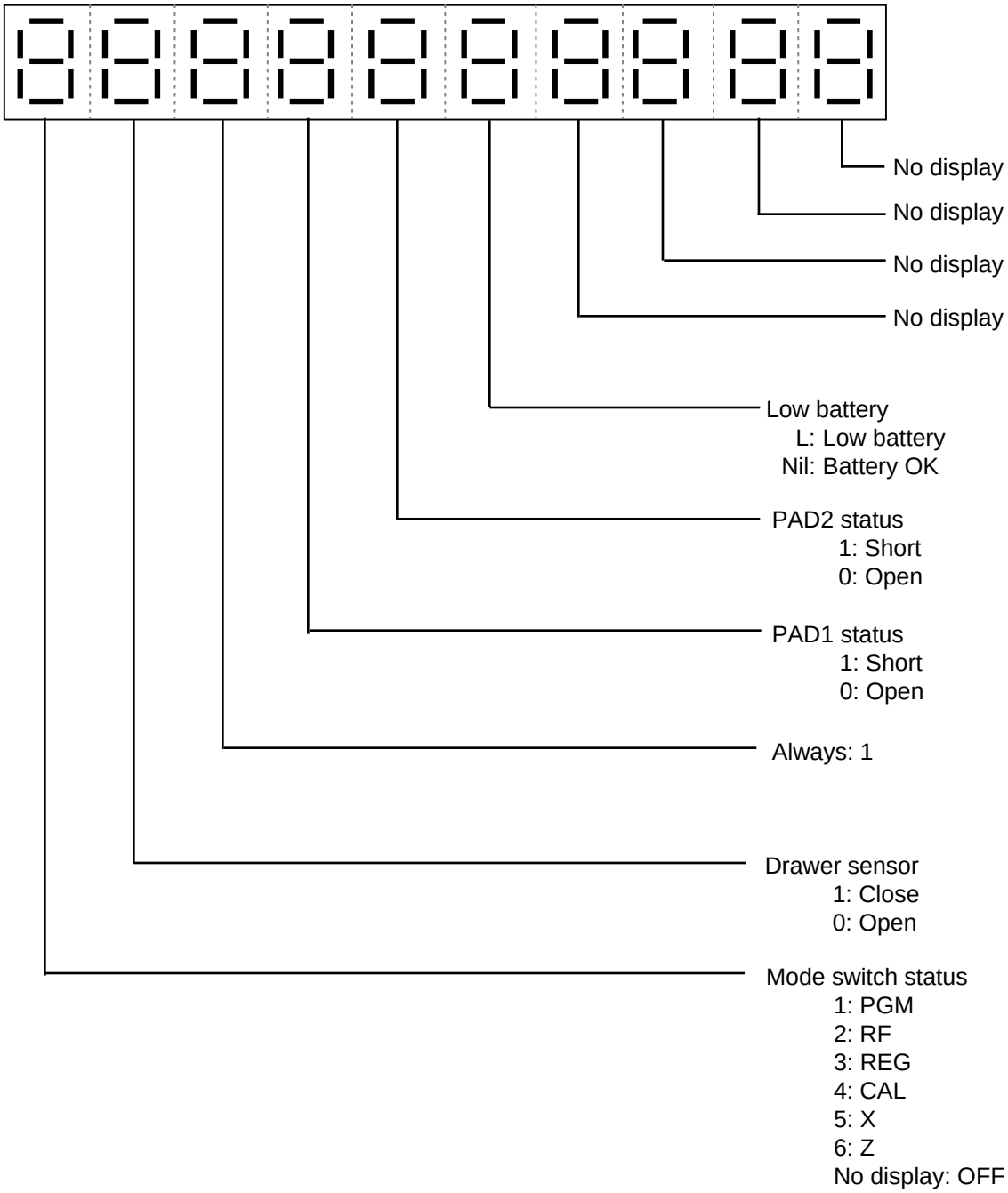
						048	042	036	030	024	018
						047	041	035	029	023	017
FEED	055	051	**7**	**8**	**9**	046	040	034	028	022	016
058	054	050	**4**	**5**	**6**	045	039	033	027	021	015
057	053	049	**1**	**2**	**3**	044	038	032	026	020	014
056	052	**C**	**0**	011	012	043	037	031	025	019	013

“020” & “026” buttons are work for “#2” key.

2. Switch status test

Press “C” button, the switch status is appeared on the display.

[DISPLAY]



3. Individual function test

3-1. Series test

"Y" "X" "1" + "#2" key

Y: 0: Normal test
1: Execute next test even if an error happend at ROM check sum

X: 0: Autockecking of RAM capacity
1: 256 Kbit RAM test
2: 1 Mbit RAM test

Execute the following test in order.

1. Display test
2. Check sum test of EP-ROM
3. RAM test
4. Drawer open test
5. Printing test
6. Date and Time test

1. Display test (All segment light on)

2. Ckeck sum test of EP-ROM

Normal end

```
ROM    SUM        OK
```

XX00: Check sum value

Error end

```
ROM    E R
```

XXXX : Check sum value

3. RAM test (Read/Write test)

Normal end receipt

256 Kbit RAM

```
RAM    32K        R/W      OK
```

1 Mbit RAM

```
RAM    128K       R/W      OK
```

Error end receipt

```
RAM    32K        E R
```

YY: Bank
XXXX: Address

4. Drawer open test

5. Printing test

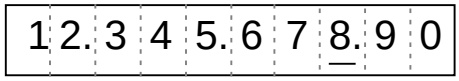
```
BBBBBBBBBBBBBBBBBBBBBB
```

6. Date and Time test

Set the date and time as follows.

Date : 31 / 12 / 96 Time : 25:59

Then, issues a receipt and display the following character.



3-2. Print test
Input “Y” “X” “2” + “#2” key.

X: 0: Print the following character continuously.
Printing speed : 45 times / Min.
1: Print the following character, open the drawer and issue a receipt
Printing speed : 25 times / Min.
Drawer open : 5 times / Min.
Receipt issue : 5 times / Min.

Y: 0: No effect
1: Print the following character without waiting time. (Continuously print)

To stop this test, press any key or turn the mode switch to “OFF” position.

Printing sample:

```
BBBBBBBBBBBB
```

3-3. RAM read only test
Input “X” “5” + “#2” key.

X: 0: Read the data from start to end address and issues receipt.
1: Read the data from start to end address continuously until power off.
Brink " - " signal on the display during checking.

Note: Be sure to execute the series test (1 + #2) before this test.

256 Kbit check receipt

```
RAM    32K        READ      OK
```

1 Mbit check receipt

```
RAM    128K       READ      OK
```

Display

3-4. INIT OPERATION (To set a Factory Default setting)
Input “8” “6” + “#2” key.

The machine is executed a INIT operation according to PAD status.
Set the data and time to “0”.
(00-00-00, 00:00:00)

3-5. Voltage check for Memory protection battery
Input “7” + “#2” key.

Display the battery voltage.
To stop this test, press any key or turn the mode switch to “OFF” position.

X.XX: Voltage value

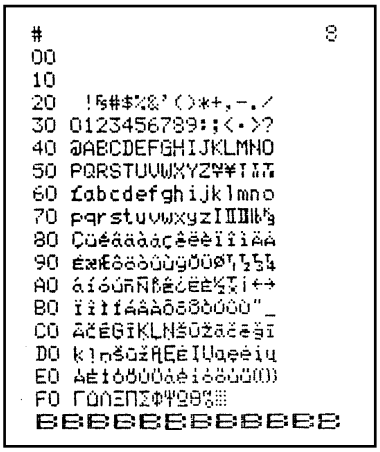
3-6. All character print test

Input “8” + “#2” key.

“8” + “#2”: Pirnts all character on receipt once.

“1” “8” + “#2”: Prints all character on receipt continuously.

To stop this test, press any key or turn the mode switch to “OFF” position.



3-7. Time display test

Input “9” + “#2” key.

Display the time.

To stop this test, press any key or turn the mode switch to “OFF” position.

		2	3	-	5	9	0	0

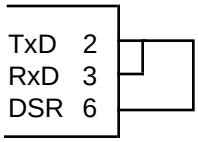
3-8. RS232C port test
Input “2” “0” “7” + “#2” key.

Execute the RS232C loop back test continuously using loop back connector.
In case an error happens, the machine issues an error receipt then stop this test.

Test description: 1: Level check at DSR signal (Low/High)
2: Send the data (05Ah) from TxD and receive it at RxD terminal.

To stop this test, turn the mode switch to “OFF” position.

Loop back connection:



Normal End

232C OK

Error End

232C ER X

X: Error code
0: Time over
1: Over run error
2: Framing error
3: RXD line data error
4: DSR line receive error

5-4. To exit the diagnostic test

To escape the diagnostic test mode, execute “INITIALIZE (MAC) operation”.

6. ERROR CODE

6-1. Operation error code

Error codes appear on display whenever you make a mistake during operation.

Error Code	Meaning	Action
E01	Mode switch position changed before finalization.	Return the mode switch to its original setting and finalize the operation.
E08	Registration without entering a clerk number. This error appears only when the clerk control function is activated.	Enter a clerk number.
E27	Transaction cancel buffer full.	Finalize the transaction.
E31	Finalization of a transaction attempted without confirming the subtotal.	Press the SUB TOTAL key.
E33	Finalize operation attempted without entering amount tender.	Enter the amount tendered.
E35	Change amount over.	Require small money.
E38	Read/reset operation without declaring cash in drawer. This error appears only when this function is activated.	Perform money declaration.
E94	Printer error.	Turn the power off, and remove jammed paper from the printer.

Press C/AC C key and check the appropriate section of this manual for the operation you want to perform.

6-2. System lock code

The following error code appears on display and receipt when the machine is lock up.
Execute the Flag MAC or MAC operation to clear these errors.

Error code: Display: X - - - - - - - - -
Receipt: X ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !

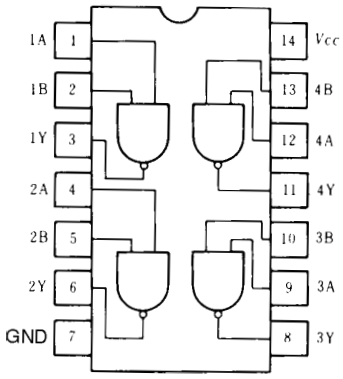
X: Lock code

Error sample: 3 ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !

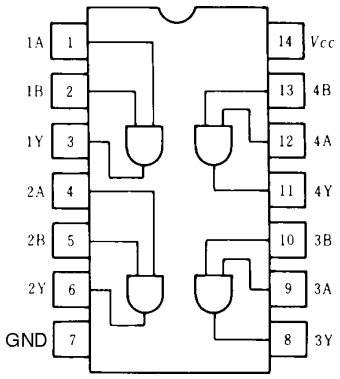
Error code	Error Name	Meaning
1	Sequential trap	The machine try to write to accumulator when the CPU is hung up.
2	Memory write error	Error happens when the CPU write the data to memory.
3	Trap error	Abnormal address
6	Timer error	Interrupt timer error
7	Stack over	Abnormal address or stack pointer has an error
0	Other error	CPU executes wrong jump vector before detect 1, 3 and 6 error code.

7. IC DATA

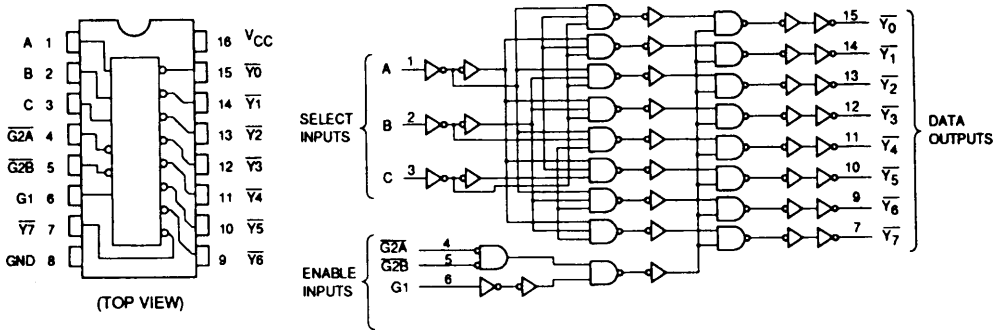
1. TC74HC00AP



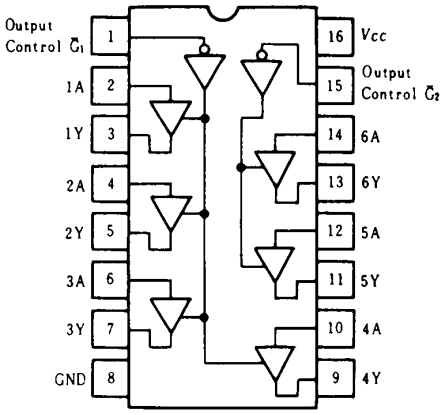
2. TC74HC08AP



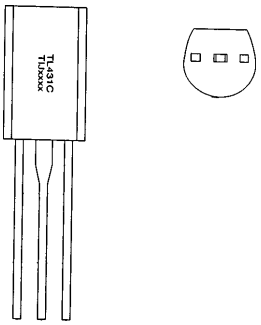
3. TC74HC138

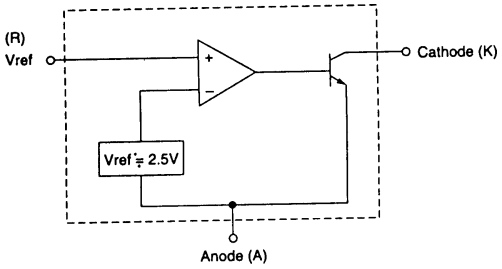


4. TC74HC367AP

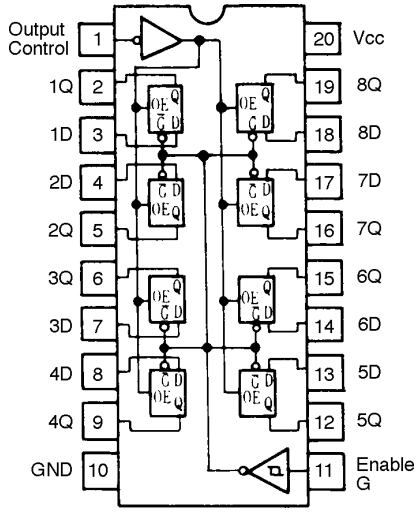


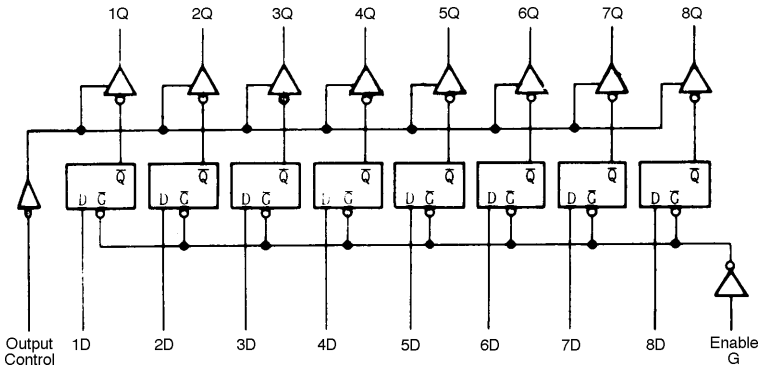
5. TL431CLPB



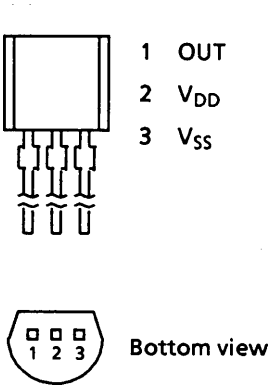


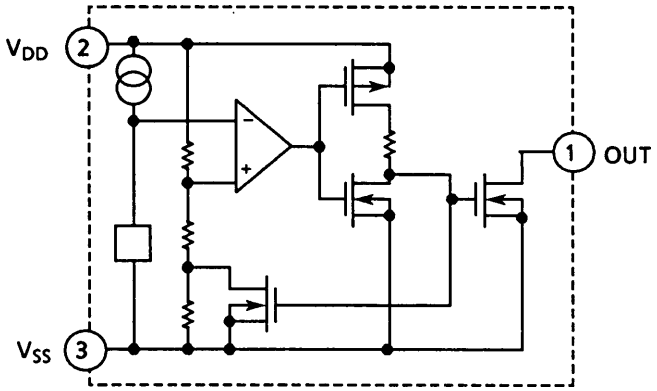
6. TC74HC373AP



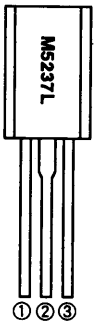


7. S-80745 / S-80719

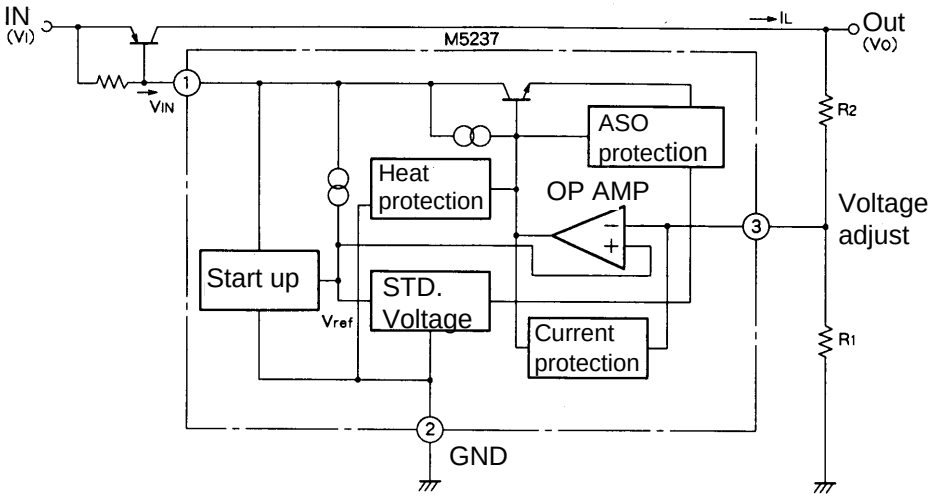




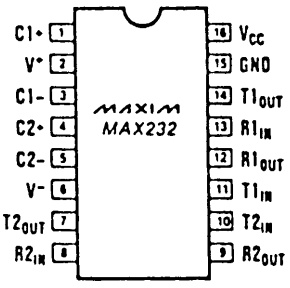
8. M5237L

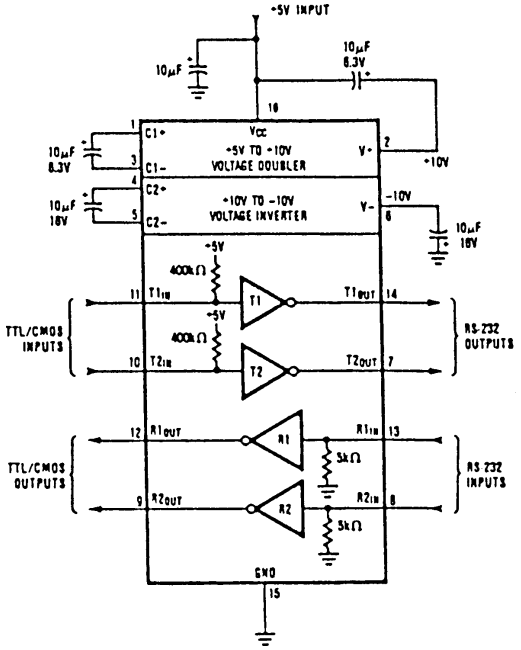


Terminal
IN
GND
Voltage adjust



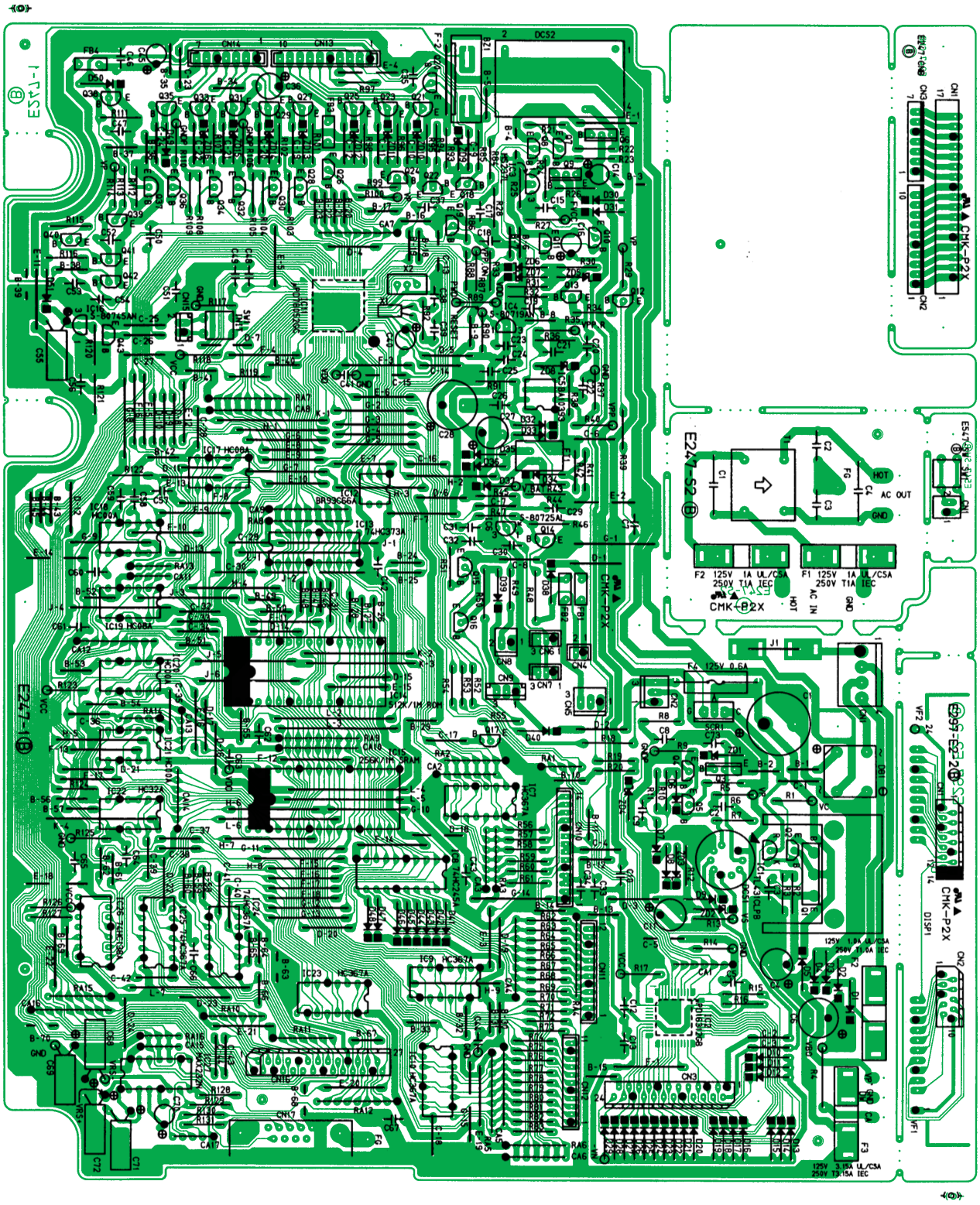
9. MAX232



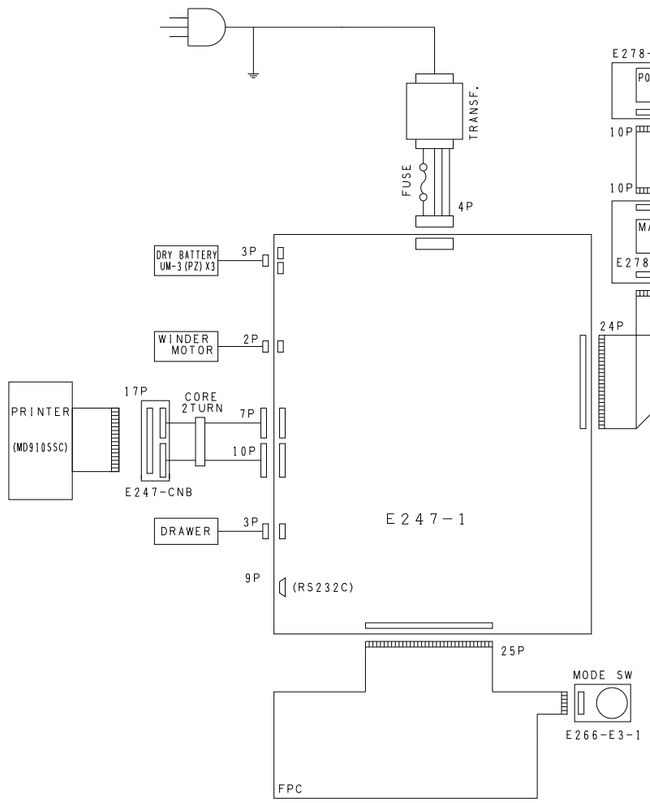


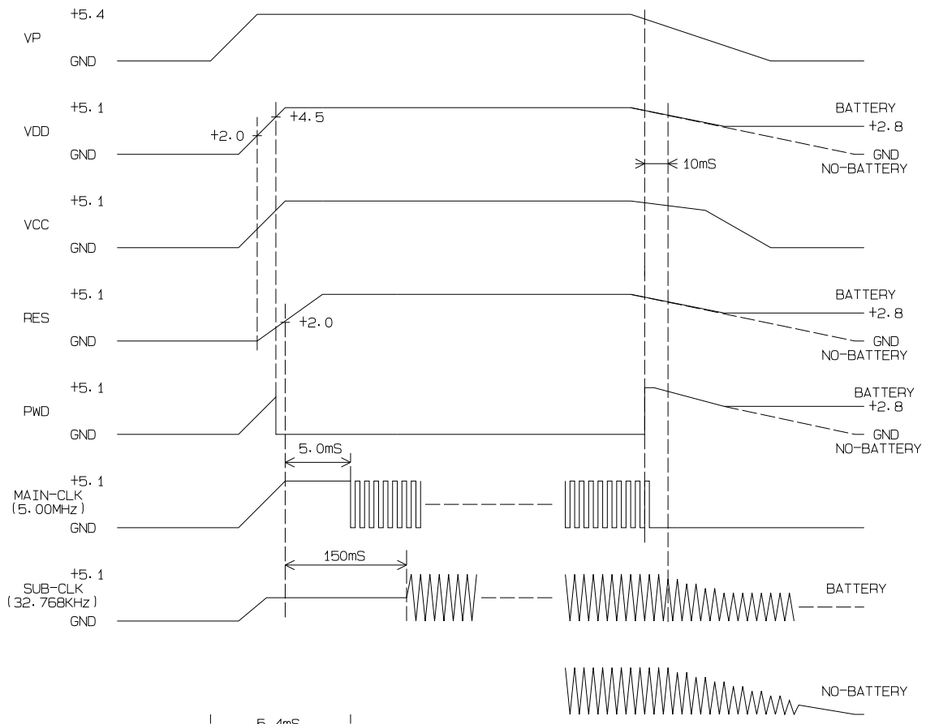
8. PCB LAYOUT

MAIN PCB (E247-1) and Connector PCB (E247-CNB)



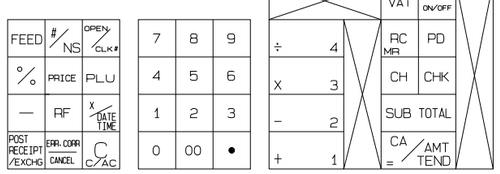
9. CIRCUIT DIAGRAMS

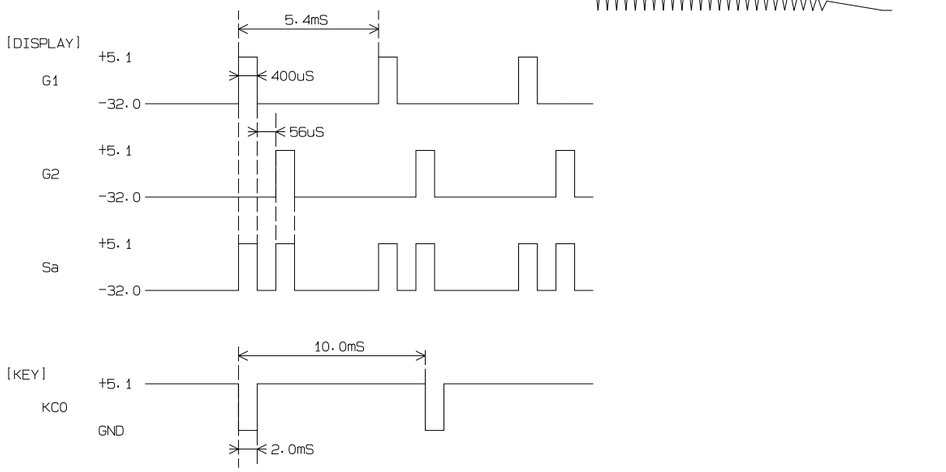




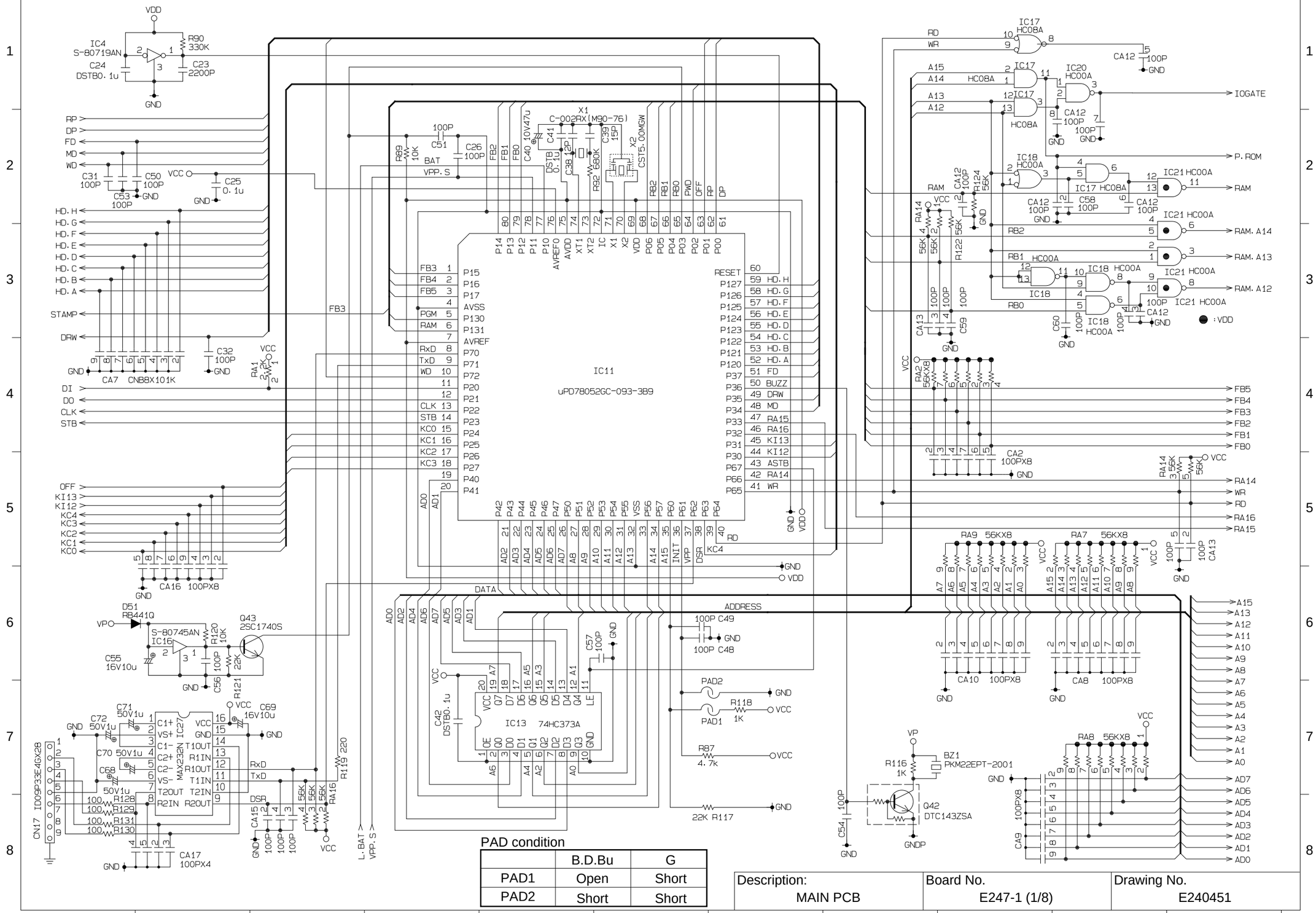
(EUROPE. UK. GERMANY. LIMITED AREAS SPEC.)

EX-247*B. D. G. BU





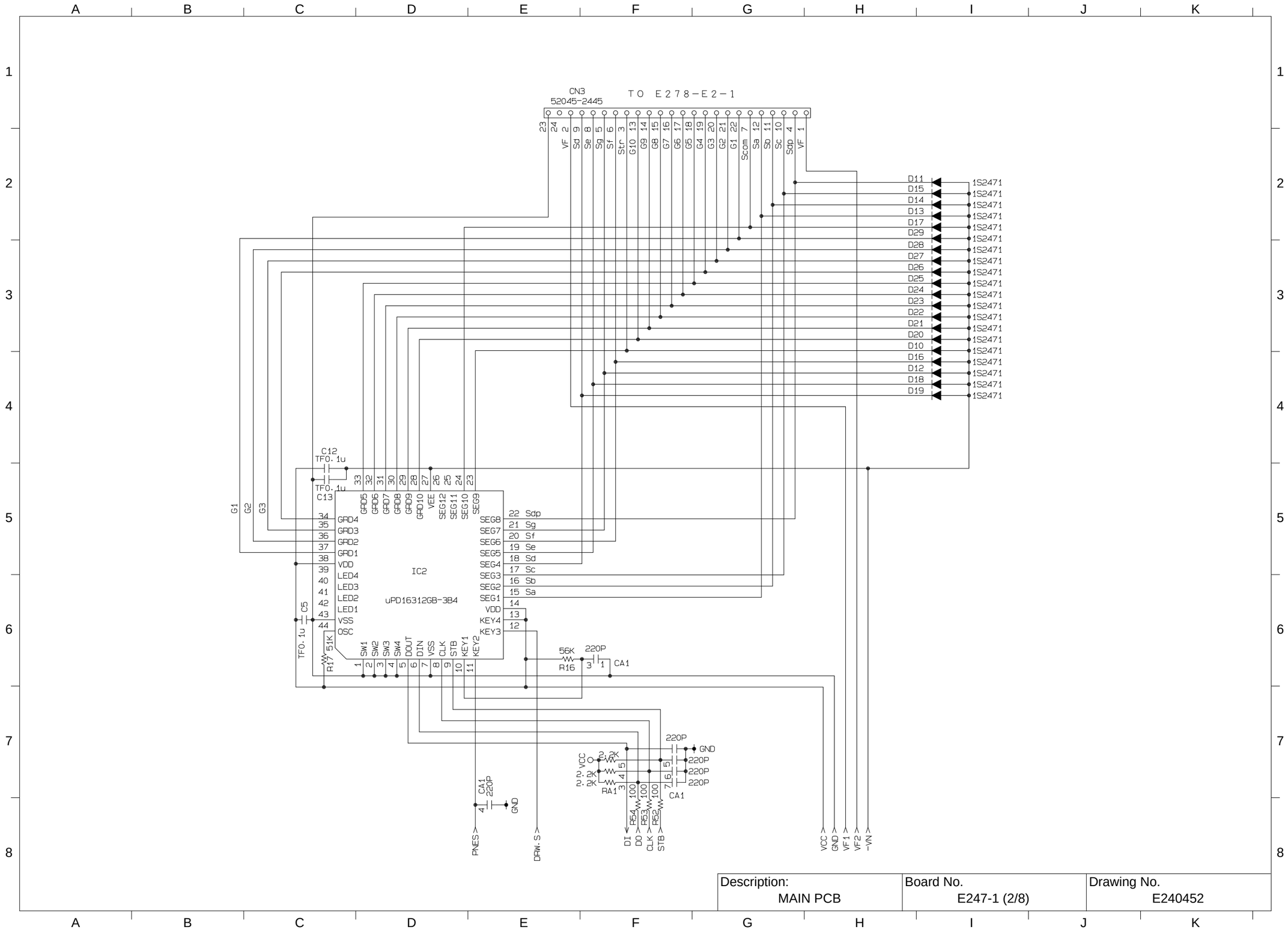
Description:	Board No.	Drawing No.
LOCATION OF PRINTED CIRCUIT BOARDS		E240450



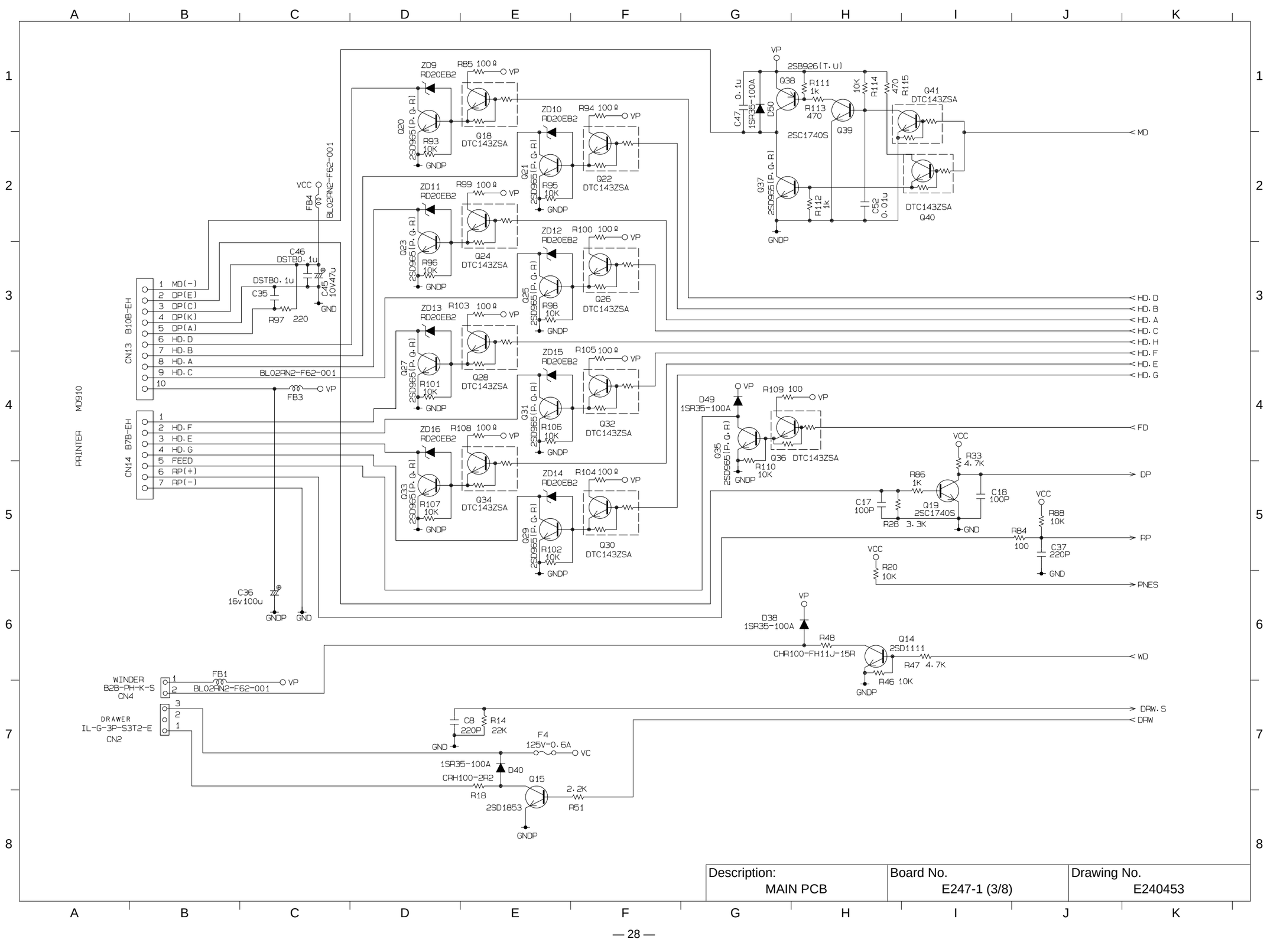
PAD condition

	B.D.Bu	G
PAD1	Open	Short
PAD2	Short	Short

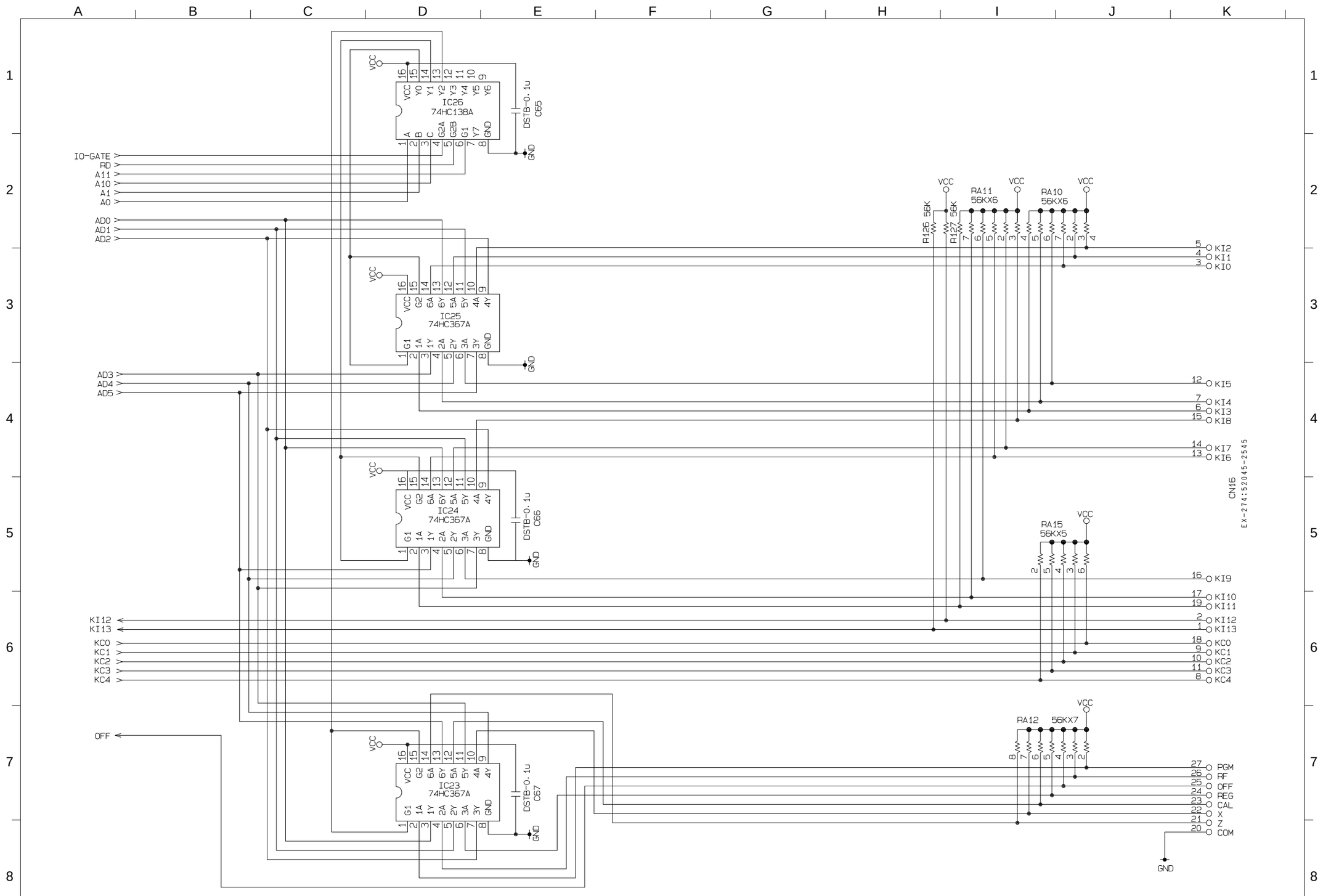
Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (1/8)	E240451

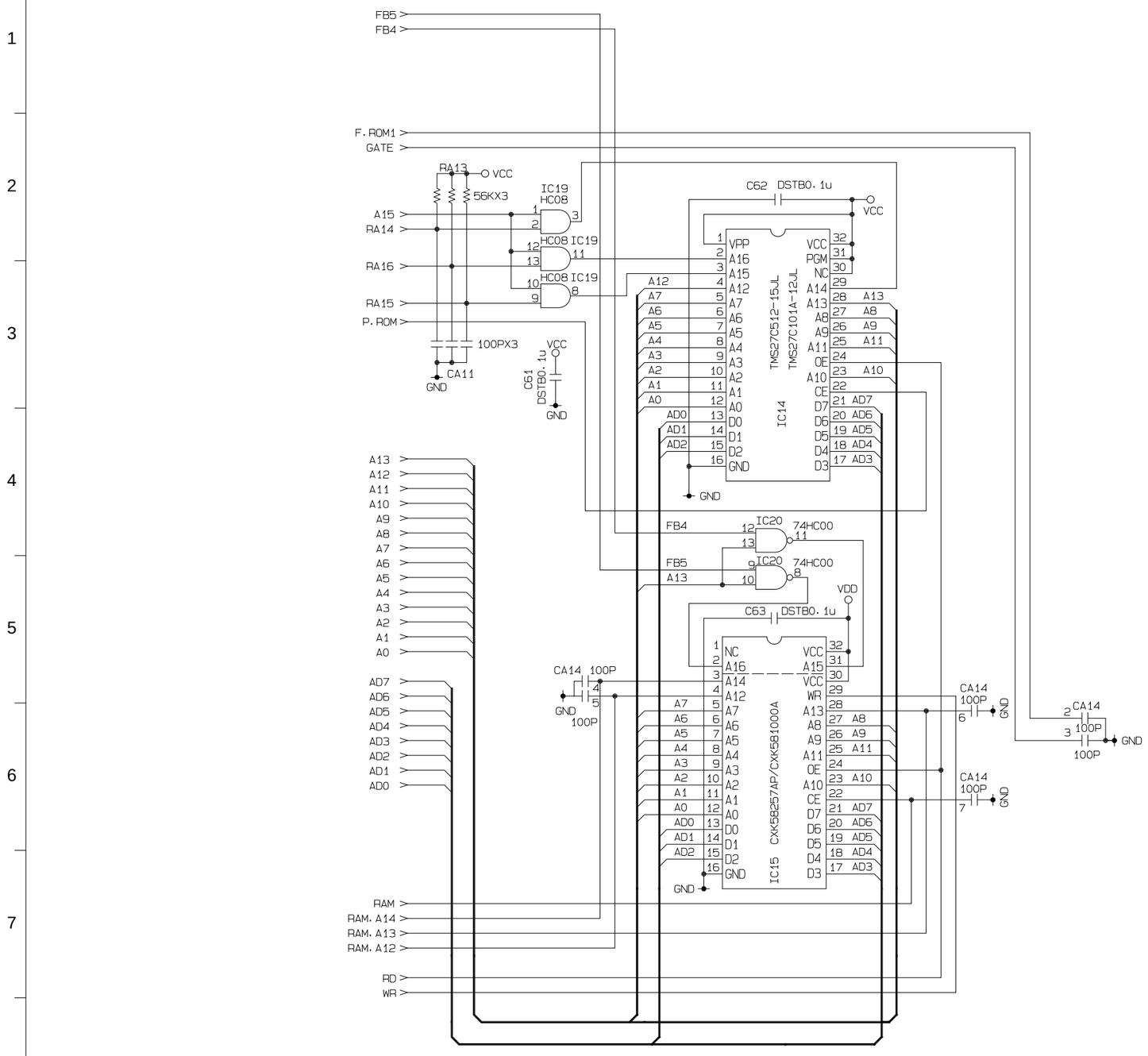

CN3
52045-2445
TO E278-E2-1
23 24 VF 2 Sd 9 Se 8 Sg 5 Sf 6 Str 3 G10 13 G9 14 G8 15 G7 16 G6 17 G5 18 G4 19 G3 20 G2 21 G1 22 Scom 7 Sa 12 Sb 11 Sc 10 Sdp 4 VF 1
D11 D15 D14 D13 D17 D29 D28 D27 D26 D25 D24 D23 D22 D21 D20 D10 D16 D12 D18 D19
1S2471
C12
TF0.1u
TF0.1u
C13
IC2
uPD16312GB-3B4
GRD4 GRD3 GRD2 GRD1 VDD LED4 LED3 LED2 LED1 VSS OSC
SEG8 SEG7 SEG6 SEG5 SEG4 SEG3 SEG2 SEG1 VDD KEY4 KEY3
Sdp Sg Sf Se Sd Sc Sb Sa
C5
TF0.1u
R17 51K
Sw1 Sw2 Sw3 Sw4 DOUT DIN VSS CLK STB KEY1 KEY2
56K R16
220P
CA1
220P
GND
RA1 2K
100 R54 R53 R52
DI DO CLK STB
PNES
DRW.S
VCC GND VF1 VF2 -VN
G1 G2 G3

Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (2/8)	E240452

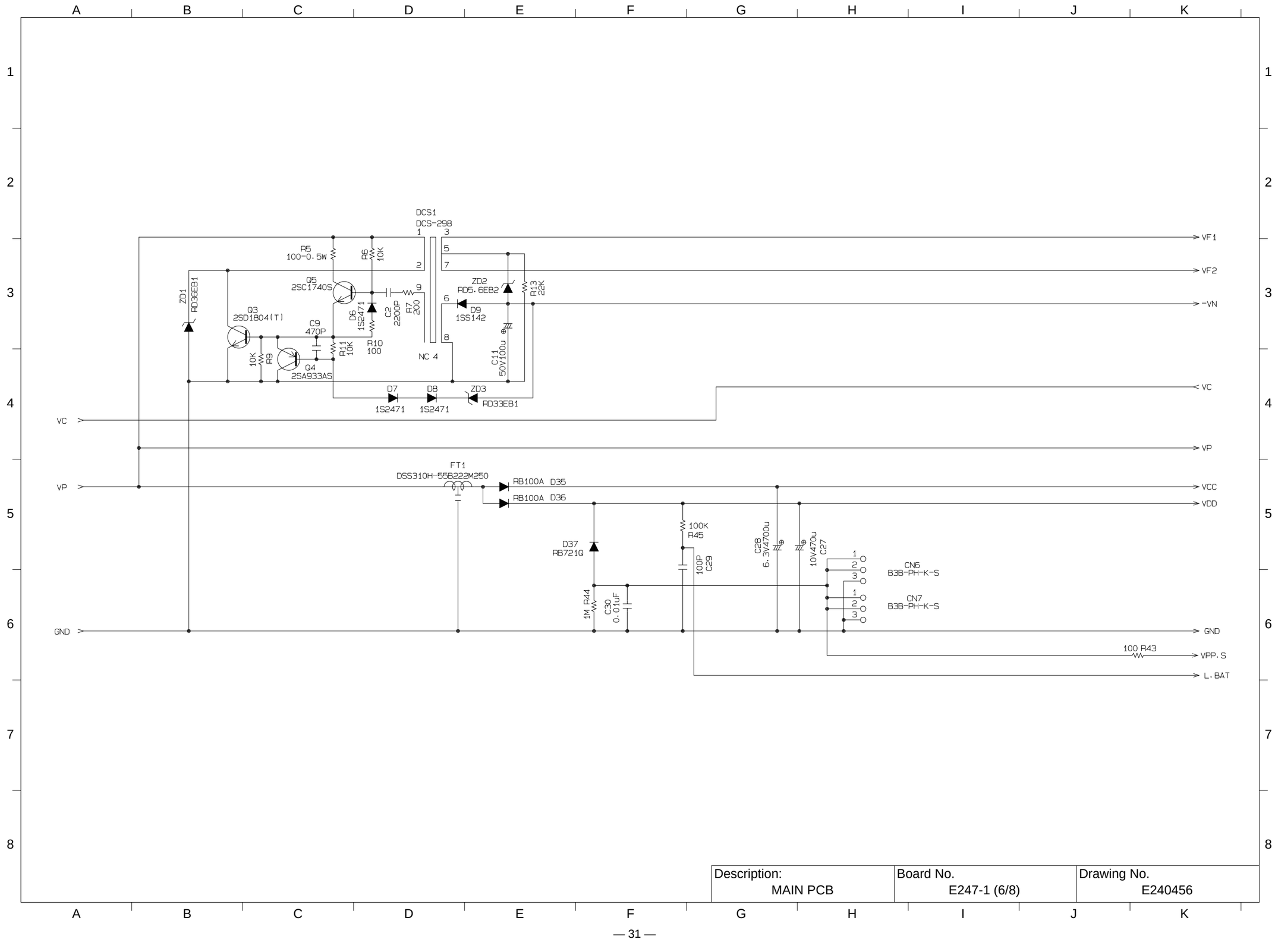


Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (3/8)	E240453

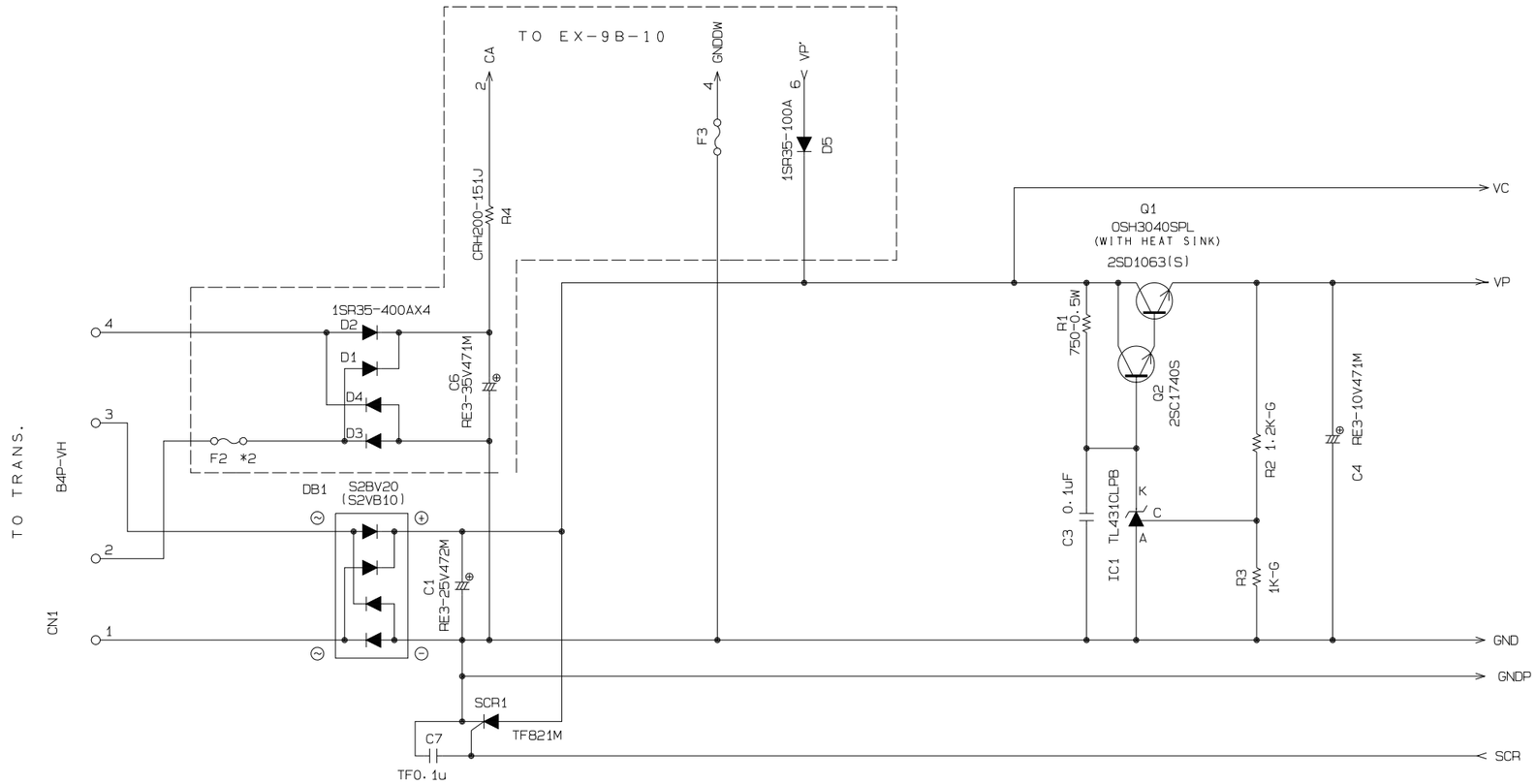

IC26
74HC138A
IC25
74HC367A
IC24
74HC367A
IC23
74HC367A
DSTB-0.1u
C65
C66
C67
VCC
GND
IO-GATE
RD
A11
A10
A1
A0
AD0
AD1
AD2
AD3
AD4
AD5
KI12
KI13
KC0
KC1
KC2
KC3
KC4
OFF
R126 56K
R127 56K
RA11 56KX6
RA10 56KX6
RA15 56KX5
RA12 56KX7
KI2
KI1
KI0
KI5
KI4
KI3
KI8
KI7
KI6
KI9
KI10
KI11
PGM
RF
OFF
REG
CAL
X
Z
COM
CN16
EX-274:520045-2545
Description:
MAIN PCB
Board No.
E247-1 (4/8)
Drawing No.
E240454



Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (5/8)	E240455


DCS1
DCS-298
1
3
5
7
2
9
6
8
NC 4
R5
100-0.5W
R6
10K
Q5
2SC1740S
ZD1
RD36EB1
Q3
2SD1804(T)
C9
470P
D6
1S2471
C2
2200P
R7
200
ZD2
RD5.6EB2
R13
22K
D9
1SS142
R11
10K
R10
100
10K
R9
Q4
2SA933AS
C11
50V100u
D7
1S2471
D8
1S2471
ZD3
RD33EB1
VF1
VF2
-VN
VC
VP
VC
FT1
DSS310H-55B222M250
VP
RB100A D35
RB100A D36
VCC
VDD
100K
R45
D37
RB721Q
C28
6.3V4700u
10V470u
C27
100P
C29
1M R44
C30
0.01uF
CN6
B3B-PH-K-S
CN7
B3B-PH-K-S
GND
GND
100 R43
VPP.S
L.BAT
Description:
MAIN PCB
Board No.
E247-1 (6/8)
Drawing No.
E240456

NOTE 1. WATAGE OF RESISTERS ARE 1/4 WATTS UNLESS OTHERWISE SPECIFIED.
NOTE 2. THE PARTS DOTTED LINE(————) ARE OPTIONS.



	F2	F3
*A	2381.00	2383.15
*C, *L	2381.00	2383.15
*B, *F, *G	2181.00	2383.15
*BU, *FU	2181.00	2383.15

Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (7/8)	E240457

SYMBLE No.	PARTS NAME
IC1	TL431CLPB
IC2	uPD16312GB-3B4
IC3	M5237L-T1
IC4	S-80719AN-Z
IC5	BA10393
IC6	S-80725AN-Z
IC7	TC74HC367AP
IC8	TC74HC245AP
IC9	TC74HC367AP
IC10	TC74HC367AP
IC11	uPD78052GC-093-3B9
IC12	BR93C66A
IC13	TC74HC373AP
IC14	TMS27C512-12/15JL
IC14	DILB28P-8JK
IC15	CXK58257AP-70/10L
IC16	S-80745AN-Z
IC17	TC74HC08AP
IC18	TC74HC00AP
IC19	TC74HC08AP
IC20	TC74HC00AP
IC21	TC74HC00AP
IC22	TC74HC32AP
IC23	TC74HC367AP
IC24	TC74HC367AP
IC25	TC74HC367AP
IC26	TC74HC138AP
IC27	MAX232N
C1	RE3-25V472M
C2	RT-HE60TKYB222K
C3	AMZV0050K1040200
C4	RE3-10V471M-T2
C5	AMZV0050K1040200
C6	RE3-35V471M-T2
C7	AMZV0050K1040200
C8	RT-HE40TKYB221K
C9	RT-HE40TKYB471K
C10	AMZV0050K1040200
C11	RE3-50V101M-T2
C12	AMZV0050K1040200
C13	AMZV0050K1040200
C14	RE3-16V22RM-T2
C15	RT-HE12TKYB103K
C16	RE3-16V22RM-T2
C17	RT-HE40TKYB101K
C18	RT-HE40TKYB101K
C19	AMZV0050K1040200
C20	RT-HE40TKYB101K
C21	RT-HE40TKYB101K
C22	RT-HE40TKYB101K
C23	RT-HE60TKYB222K
C24	RT-DSTB90TKYR104K
C25	AMZV0050K1040200
C26	RT-HE40TKYB101K
C27	RE3-10V471M-T2
C28	RE3-6.3V472M
C29	RT-HE40TKYB101K
C30	RT-HE12TKYB103K
C31	RT-HE40TKYB101K
C32	RT-HE40TKYB101K
C33	AMZV0050K1040200
C34	RT-DSTB90TKYR104K
C35	RT-DSTB90TKYR104K
C36	RE3-16V101M-T2
C37	RT-HE40TKYB221K
C38	RT-HE40TKCH120J
C39	RT-HE40TKCH150J
C40	RE2-10V470MMA-T2
C41	RT-DSTB90TKYR104K
C42	RT-DSTB90TKYR104K
C43	RT-DSTB90TKYR104K
C44	RT-DSTB90TKYR104K
C45	RE2-10V470MMA-T2
C46	RT-DSTB90TKYR104K
C47	AMZV0050K1040200
C48	RT-HE40TKYB101K

SYMBLE No.	PARTS NAME
C49	RT-HE40TKYB101K
C50	RT-HE40TKYB101K
C51	RT-HE40TKYB101K
C52	RT-HE12TKYB103K
C53	RT-HE40TKYB101K
C54	RT-HE40TKYB101K
C55	RE2-16V100MMA-T2
C56	RT-HE40TKYB101K
C57	RT-HE40TKYB101K
C58	RT-HE40TKYB101K
C59	RT-HE40TKYB101K
C60	RT-HE40TKYB101K
C61	RT-DSTB90TKYR104K
C62	RT-DSTB90TKYR104K
C63	RT-DSTB90TKYR104K
C64	RT-HE40TKYB101K
C65	RT-DSTB90TKYR104K
C66	RT-DSTB90TKYR104K
C67	RT-DSTB90TKYR104K
C68	RE2-50V010MMA-T2
C69	RE2-16V100MMA-T2
C70	RE2-50V010MMA-T2
C71	RE2-50V010MMA-T2
C72	RE2-50V010MMA-T2
C73	RT-HE40TKYB471K
R1	RD1/2WM2Y751J
R2	RD1/4WT-24Y122G
R3	RD1/4WT-24Y102G
R4	RSN2WMG151J
R5	RD1/2WM2Y101J
R6	RD1/4WT-24Y103J
R7	RD1/4WT-24Y201J
R8	RD1/4WT-24Y751J
R9	RD1/4WT-24Y103J
R10	RD1/4WT-24Y101J
R11	RD1/4WT-24Y103J
R12	RD1/4WT-24Y104J
R13	RD1/4WT-24Y223J
R14	RD1/4WT-24Y223J
R15	RD1/4WT-24Y101J
R16	RD1/4WT-24Y563J
R17	RD1/4WT-24Y513J
R18	RSN1WMG2R2J
R19	RD1/4WT-24Y101J
R20	RD1/4WT-24Y103J
R21	RD1/4WT-24Y103J
R22	RD1/4WT-24Y563J
R23	RD1/4WT-24Y103J
R24	RD1/4WT-24Y331J
R25	RD1/4WT-24Y242G
R26	RD1/4WT-24Y221J
R27	RD1/4WT-24Y103G
R28	RD1/4WT-24Y332J
R29	RD1/4WT-24Y102J
R30	RD1/4WT-24Y102J
R31	RD1/4WT-24Y301J
R32	RD1/4WT-24Y333J
R33	RD1/4WT-24Y472J
R34	RD1/4WT-24Y472J
R35	RD1/4WT-24Y822G
R36	RD1/4WT-24Y242G
R37	RD1/4WT-24Y222G
R38	RD1/4WT-24Y302J
R39	RD1/4WT-24Y152J
R40	RD1/4WT-24Y103G
R41	CRB20T24EFY2200
R42	CRB20T24EFY1200
R43	RD1/4WT-24Y101J
R44	RD1/4WT-24Y105J
R45	RD1/4WT-24Y105J
R46	RD1/4WT-24Y103J
R47	RD1/4WT-24Y472J
R48	RSN1WMG15RJ
R49	RD1/4WT-24Y102J
R50	RSN1WMG2R2J
R51	RD1/4WT-24Y222J
R52	RD1/4WT-24Y101J

SYMBLE No.	PARTS NAME
R53	RD1/4WT-24Y101J
R54	RD1/4WT-24Y101J
R55	RD1/4WT-24Y472J
R56	RD1/4WT-24Y101J
R57	RD1/4WT-24Y101J
R58	RD1/4WT-24Y101J
R59	RD1/4WT-24Y101J
R60	RD1/4WT-24Y101J
R61	RD1/4WT-24Y101J
R62	RD1/4WT-24Y102J
R63	RD1/4WT-24Y102J
R64	RD1/4WT-24Y102J
R65	RD1/4WT-24Y102J
R66	RD1/4WT-24Y102J
R67	RD1/4WT-24Y102J
R68	RD1/4WT-24Y102J
R69	RD1/4WT-24Y102J
R70	RD1/4WT-24Y101J
R71	RD1/4WT-24Y101J
R72	RD1/4WT-24Y101J
R73	RD1/4WT-24Y101J
R74	RD1/4WT-24Y101J
R75	RD1/4WT-24Y101J
R76	RD1/4WT-24Y101J
R77	RD1/4WT-24Y101J
R78	RD1/4WT-24Y101J
R79	RD1/4WT-24Y101J
R80	RD1/4WT-24Y101J
R81	RD1/4WT-24Y101J
R82	RD1/4WT-24Y101J
R83	RD1/4WT-24Y101J
R84	RD1/4WT-24Y101J
R85	RD1/4WT-24Y101J
R86	RD1/4WT-24Y103J
R87	RD1/4WT-24Y472J
R88	RD1/4WT-24Y103J
R89	RD1/4WT-24Y103J
R90	RD1/4WT-24Y334J
R91	RD1/4WT-24Y103J
R92	RD1/4WT-24Y684J
R93	RD1/4WT-24Y103J
R94	RD1/4WT-24Y101J
R95	RD1/4WT-24Y103J
R96	RD1/4WT-24Y103J
R97	RD1/4WT-24Y221J
R98	RD1/4WT-24Y103J
R99	RD1/4WT-24Y101J
R100	RD1/4WT-24Y101J
R101	RD1/4WT-24Y103J
R102	RD1/4WT-24Y103J
R103	RD1/4WT-24Y101J
R104	RD1/4WT-24Y101J
R105	RD1/4WT-24Y101J
R106	RD1/4WT-24Y103J
R107	RD1/4WT-24Y103J
R108	RD1/4WT-24Y101J
R109	RD1/4WT-24Y101J
R110	RD1/4WT-24Y103J
R111	RD1/4WT-24Y102J
R112	RD1/4WT-24Y102J
R113	RD1/4WT-24Y471J
R114	RD1/4WT-24Y103J
R115	RD1/4WT-24Y471J
R116	RD1/4WT-24Y102J
R117	RD1/4WT-24Y223J
R118	RD1/4WT-24Y102J
R119	RD1/4WT-24Y221J
R120	RD1/4WT-24Y103J
R121	RD1/4WT-24Y223J
R122	RD1/4WT-24Y563J
R123	RD1/4WT-24Y563J
R124	RD1/4WT-24Y563J
R125	RD1/4WT-24Y223J
R126	RD1/4WT-24Y563J
R127	RD1/4WT-24Y563J
R128	RD1/4WT-24Y101J
R129	RD1/4WT-24Y101J
R130	RD1/4WT-24Y101J
R131	RD1/4WT-24Y101J

SYMBLE No.	PARTS NAME
D1	1SR35-100AT-82
D2	1SR35-100AT-82
D3	1SR35-100AT-82
D4	1SR35-100AT-82
D5	1SR35-100AT-82
D6	1S2471-T-77-T
D7	1S2471-T-77-T
D8	1S2471-T-77-T
D9	1SS142-T-77
D10	1S2471-T-77-T
D11	1S2471-T-77-T
D12	1S2471-T-77-T
D13	1S2471-T-77-T
D14	1S2471-T-77-T
D15	1S2471-T-77-T
D16	1S2471-T-77-T
D17	1S2471-T-77-T
D18	1S2471-T-77-T
D19	1S2471-T-77-T
D20	1S2471-T-77-T
D21	1S2471-T-77-T
D22	1S2471-T-77-T
D23	1S2471-T-77-T
D24	1S2471-T-77-T
D25	1S2471-T-77-T
D26	1S2471-T-77-T
D27	1S2471-T-77-T
D28	1S2471-T-77-T
D29	1S2471-T-77-T
D30	RB100AT-32
D31	RB100AT-32
D32	1S2473T-77-T
D33	1S2473T-77-T
D34	RB441QT-77
D35	RB100AT-32
D36	RB100AT-32
D37	RB721Q-T-77
D38	1SR35-100AT-82
D39	1SR35-100AT-82
D40	1SR35-100AT-82
D41	1S2473T-77-T
D42	1S2473T-77-T
D43	1S2473T-77-T
D44	1S2473T-77-T
D45	1S2473T-77-T
D46	1S2473T-77-T
D47	1S2473T-77-T
D48	1S2473T-77-T
D49	1SR35-100AT-82
D50	1SR35-100AT-82
D51	RB441QT-77
ZD1	RD36EB1-T1
ZD2	RD5.6EB2-T1
ZD3	RD33EB1-T1
ZD4	RD4.7EB3
ZD5	RD6.8EB3-T1
ZD6	RD5.6EB2-T1
ZD7	RD5.6EB2-T1
ZD8	RD3.6EB2-T1
ZD9	RD20EB2-T1
ZD10	RD20EB2-T1
ZD11	RD20EB2-T1
ZD12	RD20EB2-T1
ZD13	RD20EB2-T1
ZD14	RD20EB2-T1
ZD15	RD20EB2-T1
ZD16	RD20EB2-T1

SYMBLE No.	PARTS NAME
Q1	2SD1063(R, S)
Q2	2SC1740S(QRSE)TP
Q3	2SD1804(T)
Q4	2SA933AS(QRS)TP
Q5	2SC1740S(QRSE)TP
Q6	2SB1240V2-Q.R
Q7	DTC143ZS-TP
Q8	DTC143ZS-TP
Q9	2SB1240V2-Q.R
Q10	DTA143ZS-TP
Q11	DTC143ZS-TP
Q12	2SA933AS(QRS)TP
Q13	2SC1740S(QRSE)TP
Q14	2SD1111-AA
Q15	2SD1853-AA
Q16	2SD1853-AA
Q17	DTA143ZS-TP
Q18	DTC143ZS-TP
Q19	2SC1740S(QRSE)TP
Q20	2SD965(P, Q, R)-TA
Q21	2SD965(P, Q, R)-TA
Q22	DTC143ZS-TP
Q23	2SD965(P, Q, R)-TA
Q24	DTC143ZS-TP
Q25	2SD965(P, Q, R)-TA
Q26	DTC143ZS-TP
Q27	2SD965(P, Q, R)-TA
Q28	DTC143ZS-TP
Q29	2SD965(P, Q, R)-TA
Q30	DTC143ZS-TP
Q31	2SD965(P, Q, R)-TA
Q32	DTC143ZS-TP
Q33	2SD965(P, Q, R)-TA
Q34	DTC143ZS-TP
Q35	2SD965(P, Q, R)-TA
Q36	DTC143ZS-TP
Q37	2SD965(P, Q, R)-TA
Q38	2SB926(T, U)-AA
Q39	2SC1740S(QRSE)TP
Q40	DTC143ZS-TP
Q41	DTC143ZS-TP
Q42	DTC143ZS-TP
Q43	2SC1740S(QRSE)TP
RA1	RGLD4X222J
RA2	RGLD6X563J
RA3	RGLD6X563J
RA4	RGLD8X563J
RA5	RGLD8X563J
RA6	RGLD6X563J
RA7	RGLD8X563J
RA8	RGLD8X563J
RA9	RGLD8X563J
RA10	RGLD6X563J
RA11	RGLD6X563J
RA12	RGLD8X563J
RA13	RGLD4X563J
RA14	RGLD4X563J
RA15	RGLD6X563J
RA16	RGLD4X563J
FB1	UJW-A
FB2	UJW-A
FB3	BL02RN2-R62-001
FB4	BL02RN2-R62-001
FT1	DSS310H-55B222M250

SYMBLE No.	PARTS NAME
CA1	CNB6X221K
CA2	CNB6X101K
CA3	CNB6X101K
CA4	CNB8X101K
CA5	CNB8X101K
CA6	CNB6X101K
CA7	CNB8X101K
CA8	CNB8X101K
CA9	CNB8X101K
CA10	CNB8X101K
CA11	CNB4X101K
CA12	CNB8X101K
CA13	CNB4X101K
CA14	CNB6X101K
CA15	CNB4X101K
CA16	CNB8X101K
CA17	CNB4X101K
CN1	B4P-VH
CN2	IL-G-3P-S3T2-E
CN3	52045-2445
CN4	B2B-PH-K-S
CN5	TID-X03P-B2
CN6	B3B-PH-K-S
CN7	B3B-PH-K-S
CN8	B2B-EH
CN9	B3B-EH
CN10	B14B-PH-K-S
CN11	B12B-PH-K-S
CN12	B11B-PH-K-S
CN13	B10B-EH
CN14	B7B-EH
CN15	TID-X02P-B2
CN16	52045-2545
CN17	IDO9P33E4GX28
CN17	E340524-1
DB1	S2VB20
SCR1	TF821M
F2	2181.00
F2	UF0033
F3	2383.15
F3	UF0033
F4	230.600
X1	C-002RX(M90-76)
X2	CST5.00MGW
DCS1	DCS-298
DCS2	PS10017
SW1	JPM1030-0201
Q1	OSH-3040-SPL
Q1	SILICON
Q1	3X12 ZMC-3
BZ1	PKM22EPT-2001
J1	UJW-D

SYMBLE No.	PARTS NAME
B-1~70	UJW-B
C-1~44	UJW-C
D-1~24	UJW-D
E-1~22	UJW-E
F-1~18	UJW-F
G-1~15	UJW-G
H-1~9	UJW-H
J-1~6	UJW-J
K-1~4	UJW-K
L-1~7	UJW-L

E297-E2-2

SYMBLE No.	PARTS NAME
CN1	52045-1245
CN2	52045-1045
DISP1	SH101MA

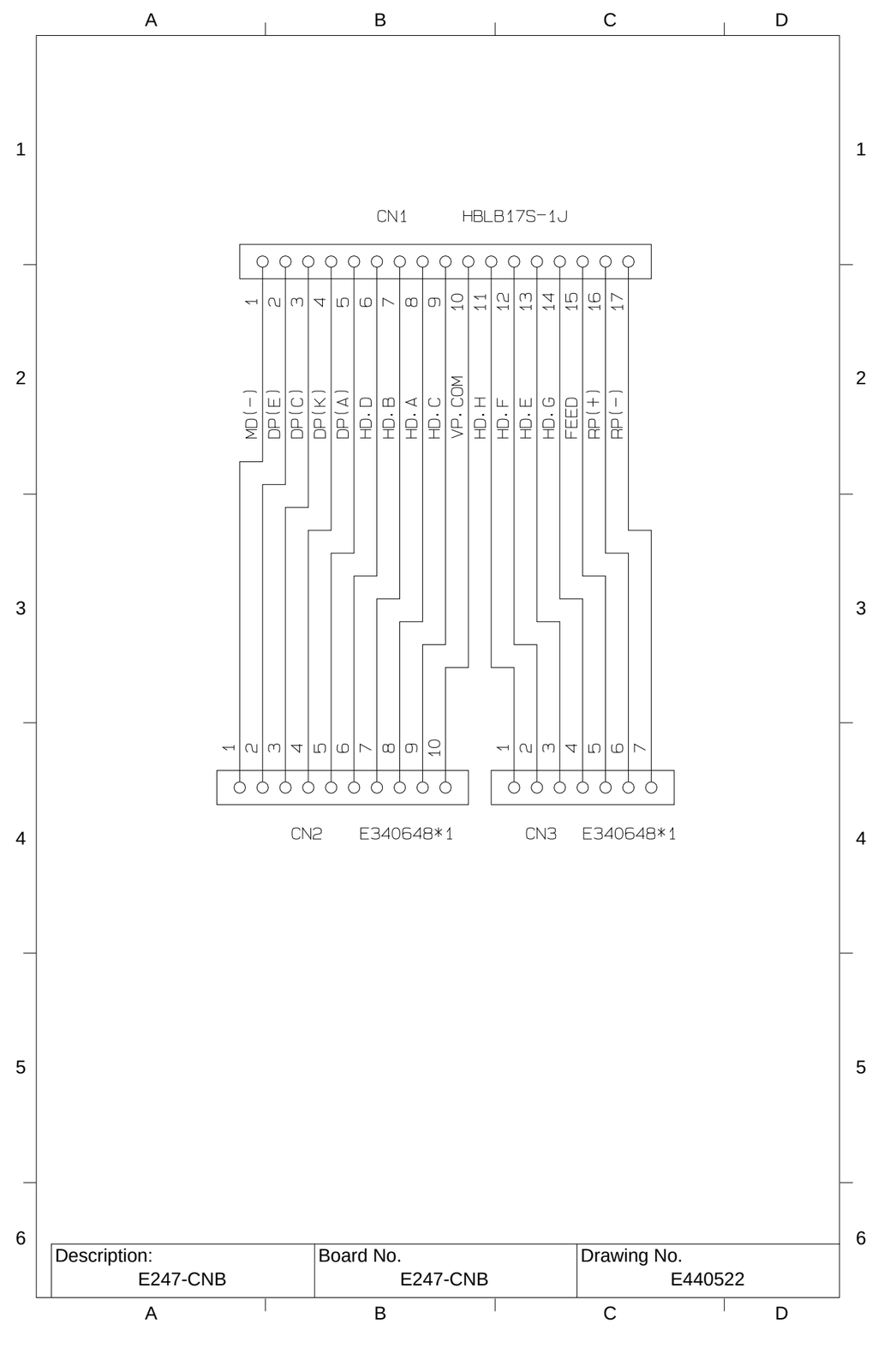
E247-CNB

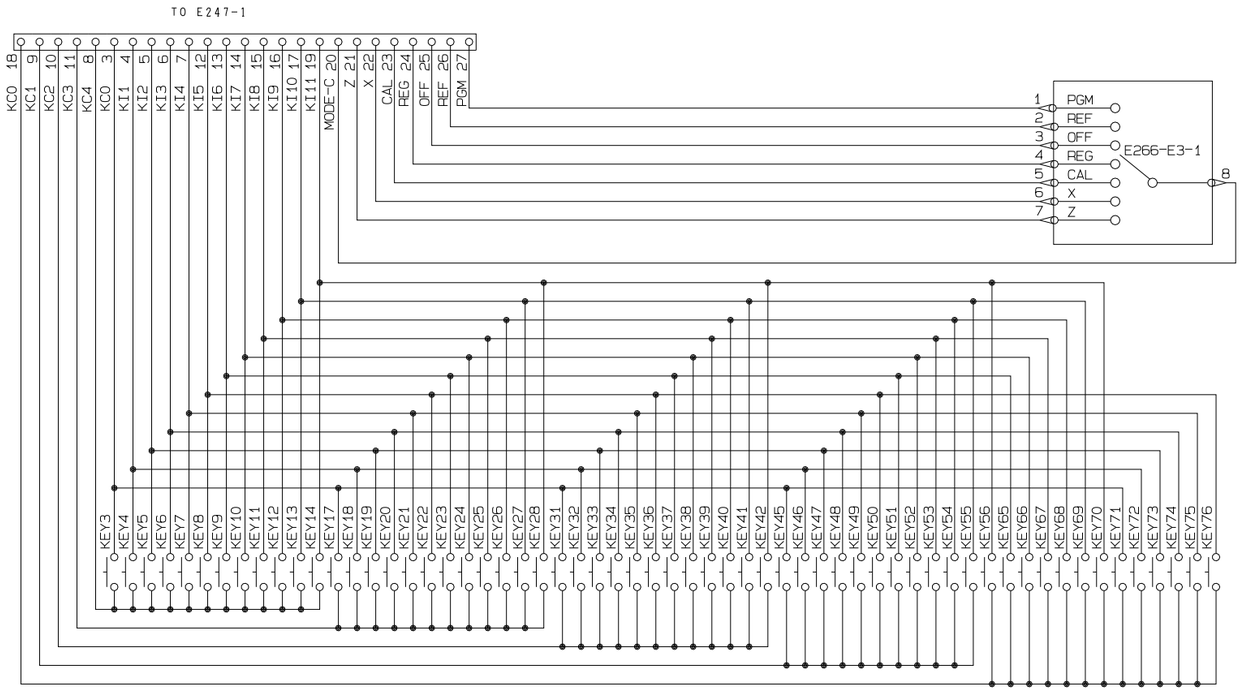
SYMBLE No.	PARTS NAME
CN1	HBLB17S-1J
CN2	E340648*1
CN3	E340648*1

E547-SW

SYMBLE No.	PARTS NAME
SW1	JPM1030-0201
CN1	E440129*1

Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (8/8)	E240458

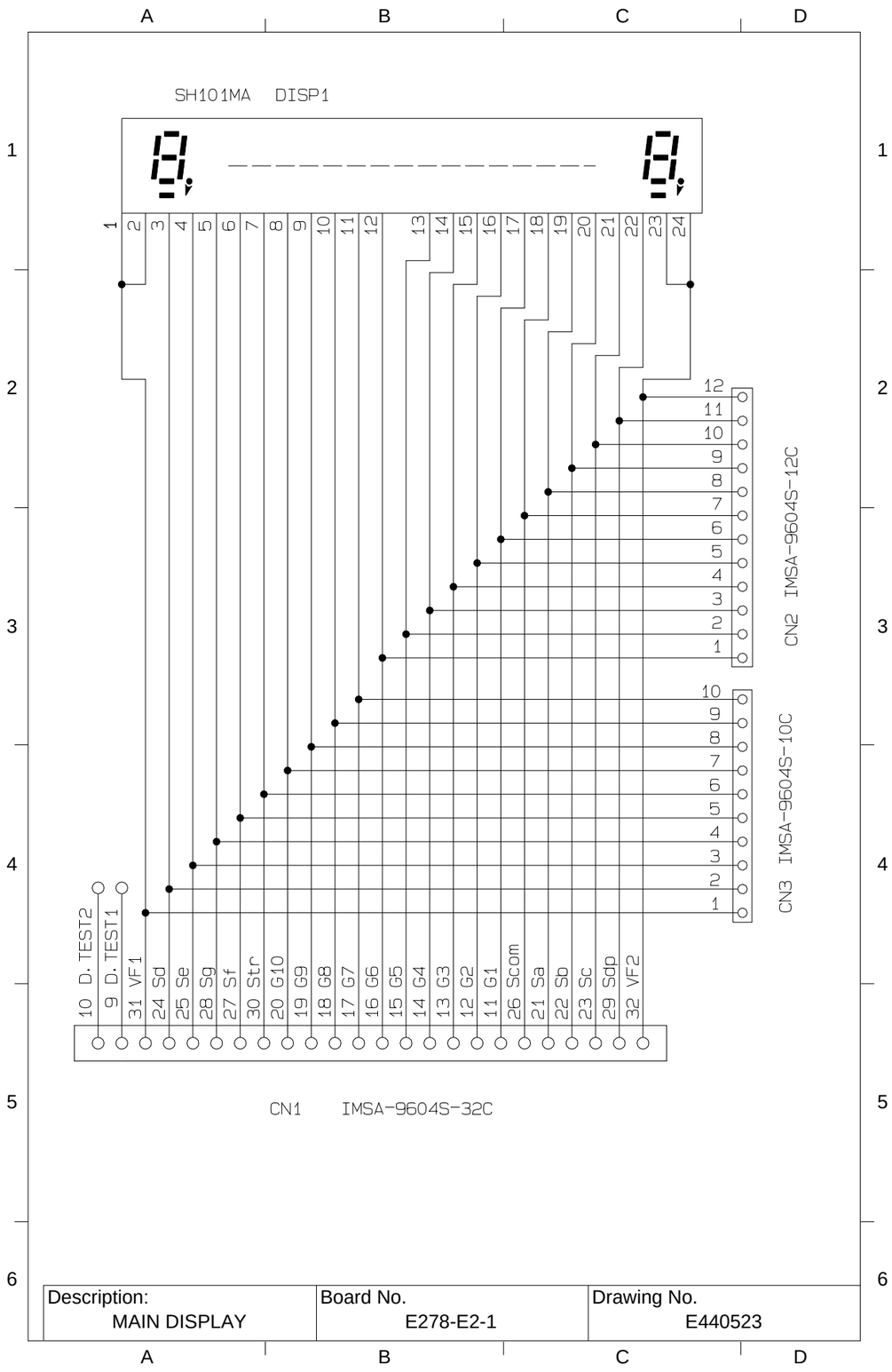

A
B
C
D
1
2
3
4
5
6
CN1 HBLB17S-1J
1 MD(-)
2 DP(E)
3 DP(C)
4 DP(K)
5 DP(A)
6 HD.D
7 HD.B
8 HD.A
9 HD.C
10 VP.COM
11 HD.H
12 HD.F
13 HD.E
14 HD.G
15 FEED
16 RP(+)
17 RP(-)
CN2 E340648*1
1 2 3 4 5 6 7 8 9 10
CN3 E340648*1
1 2 3 4 5 6 7
Description: E247-CNB
Board No. E247-CNB
Drawing No. E440522

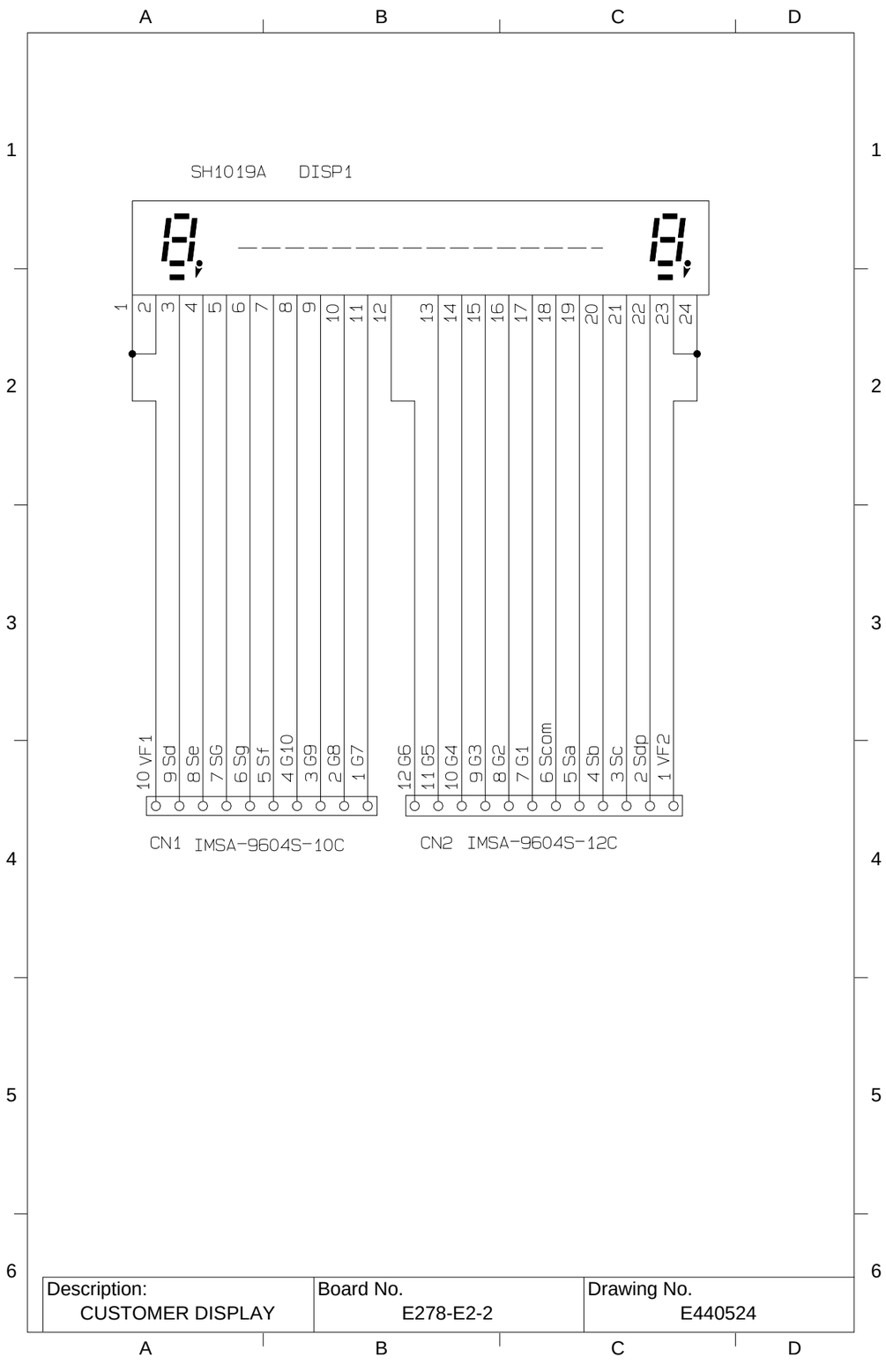


						71	72	73	74	75	76
						65	66	67	68	69	70
45	46	47	48	49	50	51	52	53	54	55	56
31	32	33	34	35	36	37	38	39	40	41	42
17	18	19	20	21	22	23	24	25	26	27	28
3	4	5	6	7	8	9	10	11	12	13	14

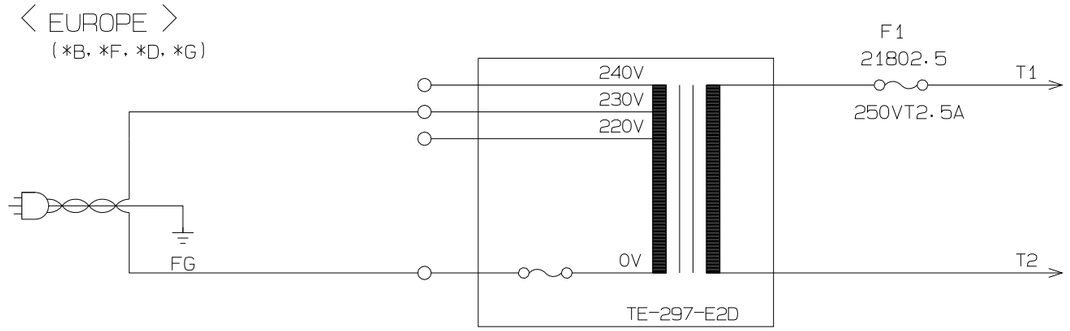
KEY CONTACT POSITION

Description:	Board No.	Drawing No.
KEYBOARD		E240465

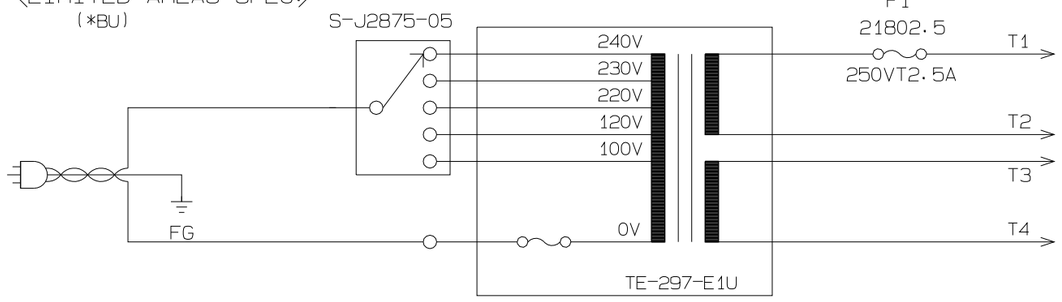

A
B
C
D
SH101MA DISP1
CN2 IMSA-9604S-12C
CN3 IMSA-9604S-10C
CN1 IMSA-9604S-32C
10 D.TEST2
9 D.TEST1
31 VF1
24 Sd
25 Se
28 Sg
27 Sf
30 Str
20 G10
19 G9
18 G8
17 G7
16 G6
15 G5
14 G4
13 G3
12 G2
11 G1
26 Scom
21 Sa
22 Sb
23 Sc
29 Sdp
32 VF2
Description:
MAIN DISPLAY
Board No.
E278-E2-1
Drawing No.
E440523


A
B
C
D
1
2
3
4
5
6
SH1019A DISP1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
10 VF1
9 Sd
8 Se
7 SG
6 Sg
5 Sf
4 G10
3 G9
2 G8
1 G7
12 G6
11 G5
10 G4
9 G3
8 G2
7 G1
6 Scom
5 Sa
4 Sb
3 Sc
2 Sdp
1 VF2
CN1 IMSA-9604S-10C
CN2 IMSA-9604S-12C
Description:
CUSTOMER DISPLAY
Board No.
E278-E2-2
Drawing No.
E440524

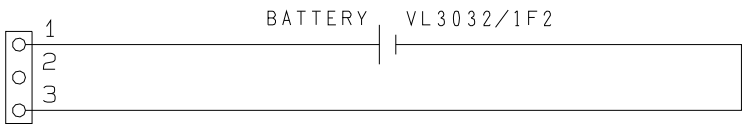
〈 EUROPE 〉
(*B, *F, *D, *G)



〈LIMITED AREAS SPEC.〉
(*BU)



Description:	Board No.	Drawing No.
POWER SUPPLY CIRCUIT		E340638



Description:	Board No.	Drawing No.
BATTERY		E440525

10. PARTS LIST

1. Main PCB block E247-1 ass'y 43
2. Main display block E247-E2-1 47
3. Customer display block E247-E2-2 47
4. Button ass'y 48
5. Upper case ass'y 48
6. Lower case ass'y 48
7. Total component 49
8. Cash drawer (DL-2763) 50
9. Printer 52

Notes:

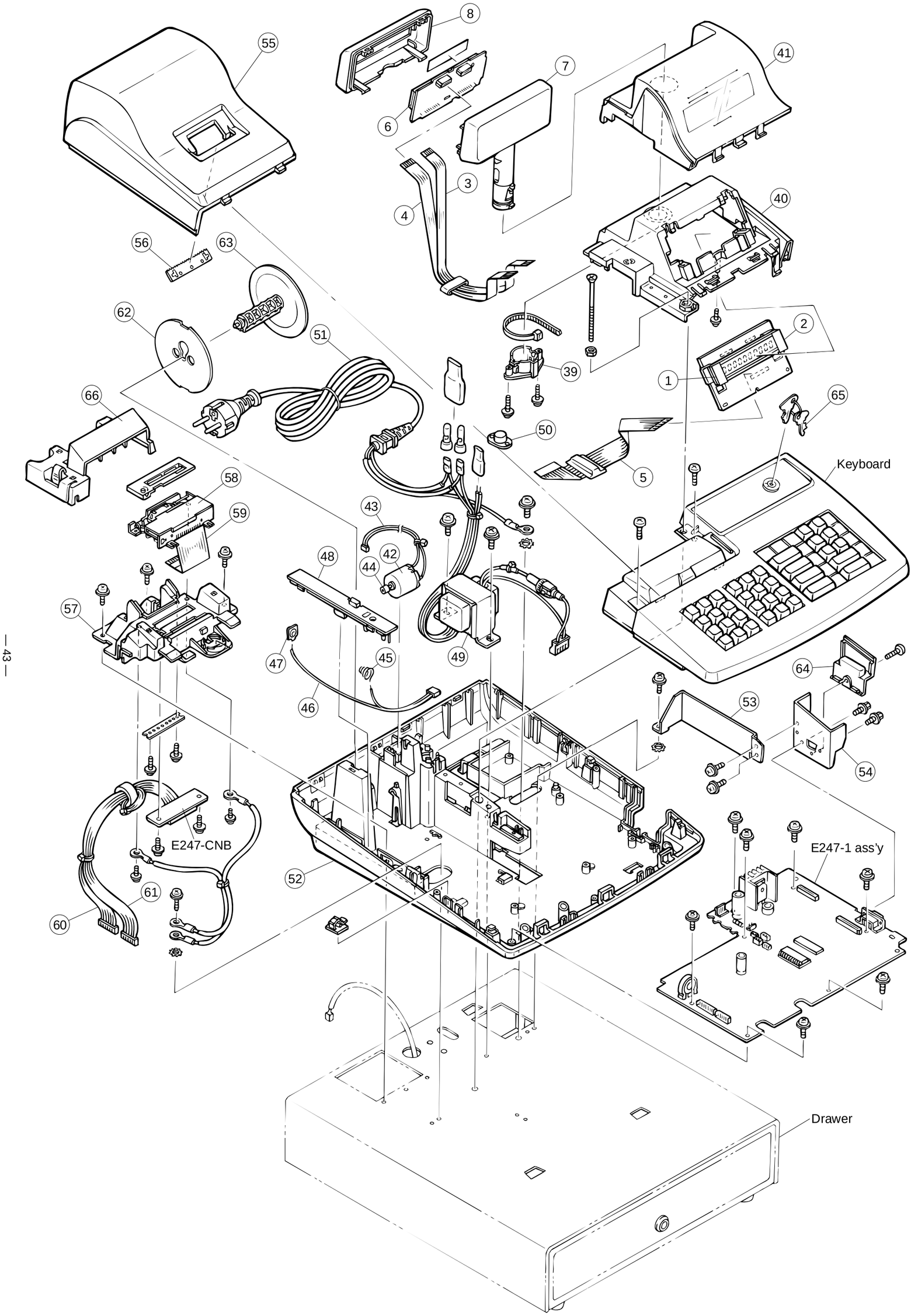
1. Prices and specifications are subject to change without notice.
2. As for order / supply of spare parts, refer to the "GUIDEBOOK for Spare Parts Supply", a separate publication.
3. The numbers in item column correspond to the same numbers in drawing.
4. MARKS:

   Q: Quantity used per unit

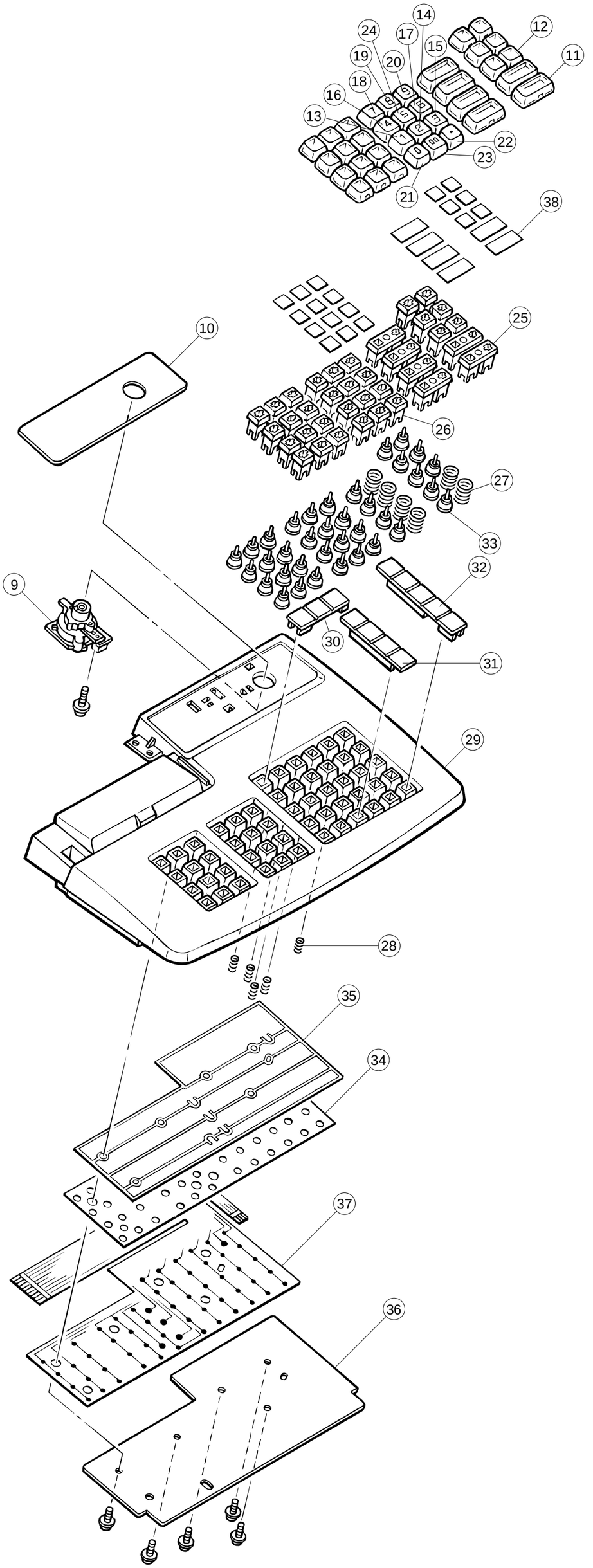
   R: Rank

   A: Essential
   B: Stock recommended
   C: Less recommended
   X: No stock recommended

Exploded Diagram



Keyboard Block



Item	Code No.	Parts Name	Specification	Version	Q	R
	1. Main PCB block E247-1 ass'y					
	6193 4726	Main PCB ass'y E247-1	E240425*2	All countries	1	A
IC2	2006 1207	LSI	UPC16312GB-3B4		1	A
IC11	2006 1655	LSI	UPD78052GC-093-3B9		1	A
IC14	2006 1354	LSI	TMS27C512-12/15JL		1	A
IC15	2006 1319	RAM	CXK58275AP-70/10L		1	A
IC26	2101 0189	MOS IC	TC74HC138AP		1	A
IC18, IC20-21	2105 1008	C-MOS IC	TC74HC00AP		3	A
IC13	2105 1169	C-MOS IC	TC74HC373AP		1	A
IC17,19	2105 1218	C-MOS IC	TC74HC08AP		2	A
IC23-25	2112 0035	MOS IC	TC74HC367AP		3	A
IC27	2112 0329	Bipolar IC	MAX232N		1	A
IC4	2112 0336	Reset IC	S-80719AN-Z		1	A
IC16	2112 0406	Reset IC	S-80745AN-Z		1	A
IC1	2120 7349	Regulator IC	TL431CLPB		1	A
Q38	2210 7186	Transistor	2SB926(T,U)-AA		1	B
Q14	2230 3902	Transistor	2SD1111-AA		1	B
Q15	2230 4135	Transistor	2SD1853-AA		1	B
Q20-21,23 Q25,27,29 Q31,33,35 Q37	2230 5261	Transistor	2SD965(P.Q.R)-TA		10	B
Q18,22,24 Q26,28,30 Q32,34,36 Q40-42	2250 0847	Digital transistor	DTC143ZS-TP		12	B
Q3	2250 1309	Transistor	2SD1804(T)		1	B
Q4	2250 1323	Transistor	2SA933AS(QRS)TP		1	B
Q2,5,19, Q39,43	2250 1330	Transistor	2SC1740S(QRSE)TP		5	B
Q1	2250 1554	Transistor	2SD1063(R,S)		1	B
ZD1	2315 2661	Zener diode	RD36EB1-T1		1	B
ZD9-16	2315 2836	Zener diode	RD20EB2-T1		8	B
ZD2	2315 3109	Zener diode	RD5.6EB2-T1		1	B
ZD3	2315 3112	Zener diode	RD33EB1-T1		1	B
DB1	2315 2857	Diode stack	S2VB20		1	B
D6-8,10-29	2301 0046	Diode	1S2471 T-77-T		23	B
D9	2315 2619	Diode	1SS142-T-77-T		1	B
D38,40, D49,50	2315 2682	Diode	1SR35-100A-T-82		4	B
D37	2315 2864	Diode	RB721Q-T-77		1	B
D35,36	2390 0882	Schottky barrier diode	RB100AT-32		2	B
D51	2390 1967	Diode	RB441QT-77		1	B
X2	2408 8261	Ceramic oscillator	CST5.00MGW		1	B
X1	2520 3445	Crystal oscillator	C-002RX(M90-76)		1	B
DCS1	3000 7623	DC/DC converter	DCS-298		1	A
R51		Carbon film resistor	CR-25-2.2KOHMJ-T		1	X
R7		Carbon film resistor	CR-25-200OHMJ-T		1	X

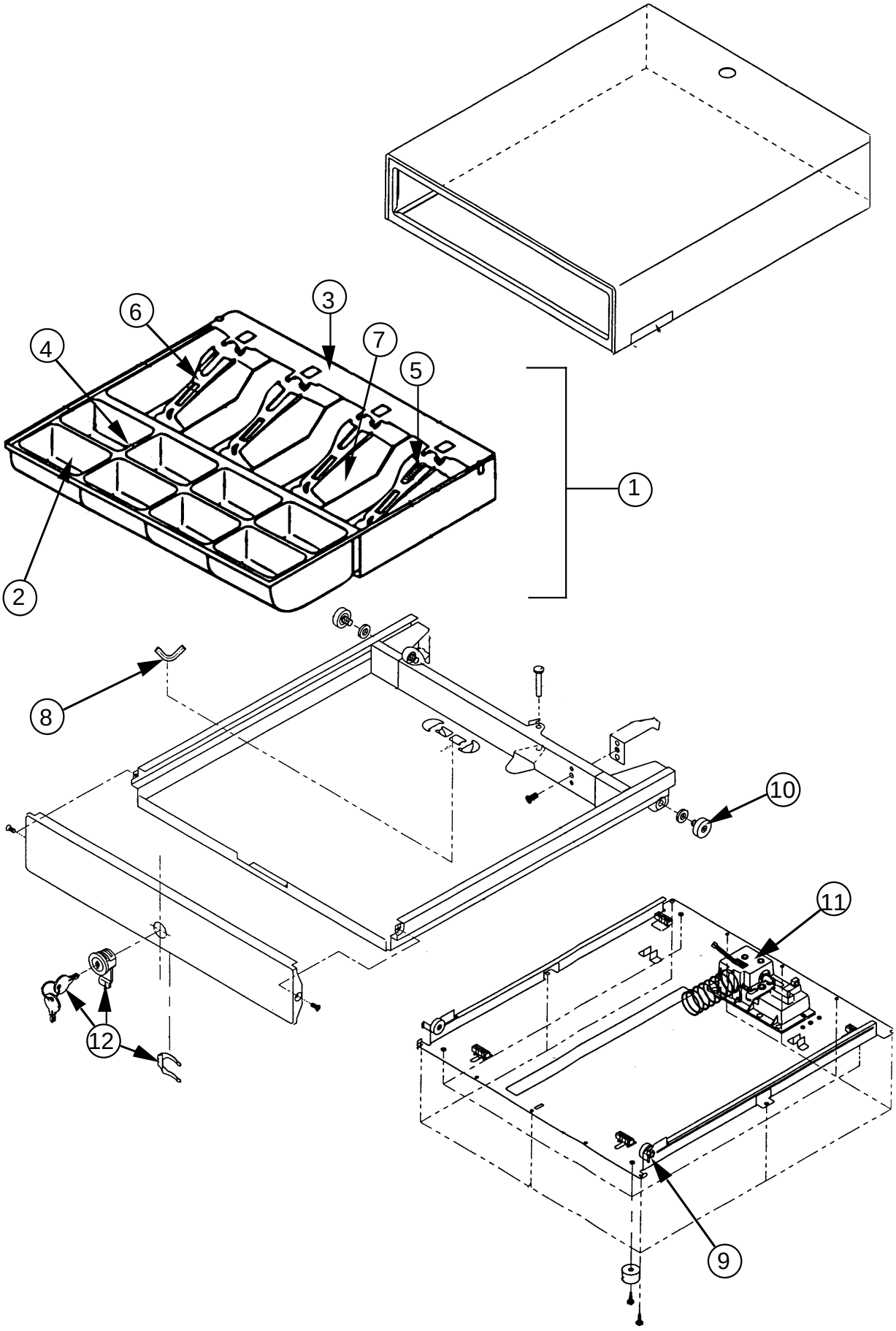
Item	Code No.	Parts Name	Specification	Version	Q	R
R10,19,43 R52-54, R84,85,94, R99,100, R103-105, R108,109, R128-131		Carbon film resistor	CR-25-100OHMJ-T		20	X
R86,111, R112,116, R118		Carbon film resistor	CR-25-1KOHMJ-T		5	X
R33,47,87		Carbon film resistor	CR-25-4.7KOHMJ-T		3	X
R6,9,11, R20,23,46 R88,89,93, R95,96,98, R106,107, R110,114, R120		Carbon film resistor	CR-25-10KOHMJ-T		18	X
R90		Carbon film resistor	CR-25-330KOHMJ-T		1	X
R44		Carbon film resistor	CR-25-1MOHMJ-T		1	X
R97,119		Carbon film resistor	CR-25-220OHM-J-T		2	X
R28		Carbon film resistor	CR-25-3.3KOHM-J-T		1	X
R13-14, R117,121,		Carbon film resistor	CR-25-22KOHM-J-T		4	X
R92		Carbon film resistor	CR-25-680K-OHM-J-T		1	X
R5		Carbon film resistor	R-50XT-24J101		1	X
R1		Carbon film resistor	R-50X-750-J		1	X
R2		Carbon film resistor	R-25-1.2K-G-T24-T		1	X
R3		Carbon film resistor	R-25-1K-G-T24-T		1	X
R16,122, R124,126, R127		Carbon film resistor	R-25-56K-J-T24-T		5	X
R17		Carbon film resistor	R-25-51K-J-T24-T		1	X
R45		Carbon film resistor	R-25-100K-J-T24-T		1	X
R18		Metal film resistor	CRH100-F11J-2R2		1	X
R48		Metal film resistor	CRH100-FH11J-15R		1	X
R113,115		Carbon film resistor	CR-25-470-OHMJ-T		2	X
RA7-9,12		Carbon film resistor	RGLD8X563J		4	X
RA1		Module resistor	RGLD4X222J		1	X
RA13-14,16		Module resistor	RGLD4X563J		3	X
RA2,10,11, RA15		Module resistor	RGLD6X563J		4	X
C4,27		Electrolytic capacitor	RE3-10V471M-T2		2	X
C1		Electrolytic capacitor	RE3-25V472M		1	X
C36		Electrolytic capacitor	RE3-16V101M-T2		1	X
C55,69		Electrolytic capacitor	RE2-16V100MMA-T2		2	X
C68,70-72		Electrolytic capacitor	RE2-50V010MMA-T2		4	X
C40,45		Electrolytic capacitor	RE2-10V470MMA-T2		2	X
C2,23		Ceramic capacitor	RT-HE60TKYB222K		2	X
C30,52		Ceramic capacitor	RT-HE12TKYB103K		2	X
C11		Electrolytic capacitor	RE2-50V101M-T2		1	X
C28		Electrolytic capacitor	RE3-6.3V472M		1	X

Item	Code No.	Parts Name	Specification	Version	Q	R
C17-18, C26,29, C31-32, C48-51, C53-54, C56-60,64		Ceramic capacitor	RT-HE40TKYB101K		18	X
C9		Ceramic capacitor	RT-HE40TKYB471K		1	X
C24,35, C41-42,46, C61-63, C65-67		Ceramic capacitor	RT-DSTB90TKYR104K		11	X
C38		Ceramic capacitor	RT-HE40TKCH120J		1	X
C39		Ceramic capacitor	RT-HE40TKCH150J		1	X
C5,12,13, C25,47		Film capacitor	AMZV0050K1040200		5	X
C8,37		CERAMIC DISC CAP	RT-HE40TKYB221K		2	X
CA1		Module capacitor	CNB6X221K		1	X
CA7-10,12		Module capacitor	CNB8X101K		6	X
CA2,14		Module capacitor	CNB6X101K		2	X
CA11,13,15, CA17		Module capacitor	CNB4X101K		4	X
FT1		EMI filter	DSS310H-55B222M250		1	X
FB3-4		Ferrite beads	BL02RN2-R62-001		2	X
F4	3000 7777	Fuse	230.600		1	A
BZ1	3240 2089	Buzzer	PKM22EPT-2001		1	C
CN2	3500 3355	Pin ass'y 3P	IL-G-3P-S3T2-E		1	C
CN6,7	3500 5845	PCB connector	B3B-PH-K-S		2	C
CN3	3501 5404	FFC connector	52045-2445		1	C
CN4	3501 6244	Connector	B2B-PH-K-S		1	C
CN13	3540 3934	Connector	B10B-EH		1	C
CN16	3540 5081	PCB connector	52045-2545		1	C
CN17	3540 5172	Connector	ID09P33E4GX28		1	C
CN14	3580 0693	Connector	B7B-EH		1	C
CN1	3580 2371	Connector	B4P-VH		1	C
IC14	3635 0024	IC socket	DILB28P-8JK		1	X
Q1		Heat sink	OSH-3040-SPL		1	X
Q1		Screw	3X12 ZMC-3		1	X
		PCB-E247-1	E140198-1		1	X
	2. Main display block E247-E2-1					
DISP1	2408 8226	Display tube	SH101MA		1	A
	3000 8040	Ferrite core	SSC-40-12		1	X
CN1	3501 5404	FFC connector	52045-2445		1	B
CN3	3540 4906	PCB connector	52045-1045		1	C
CN2	3540 4913	PCB connector	52045-1245		1	C
1	6246 4260	Display cushion A	E412177-1		2	X
2	6246 4270	Display spacer	E412178-1		2	X
3	6246 4290	FFC joiner B (12P)	E412175-2		1	B
4	6246 4300	FFC joiner C (10P)	E412175-3		1	B
5	6248 0508	FFC joiner A (23P)	E440442-1		1	B
	4308 1298	PCB-E278-E2	E240025A-1		1	X
	3. Customer display block E247-E2-2					
DISP2	2408 8233	Display tube	SH1019A		1	A
CN1	3540 4906	PCB connector	52045-1045		1	C

Item	Code No.	Parts Name	Specification	Version	Q	R
CN2	3540 4913	PCB connector	52045-1245		1	C
2	6246 4270	Display spacer	E412178-1		2	X
6	6246 4310	Display cushion B	E412177-2		2	X
7	6247 6469	Customer display case	E240325-1		1	C
8	6248 0515	Rear display panel	E240326-4		1	C
	4. Button ass'y					
9	6192 4970	Mode key switch ass'y	E311944*1		1	B
10	6284 0844	Mode key plate	E440460-1		1	C
11	6221 3988	L cap	E210964-1		6	C
12	6221 4025	S cap	E311103-1		18	C
13	6245 7250	S button E238-1	E311792-1		1	C
14	6245 7260	S button E238-2	E311792-2		1	C
15	6245 7270	S button E238-3	E311792-3		1	C
16	6245 7280	S button E238-4	E311792-4		1	C
17	6245 7290	S button E238-6	E311792-5		1	C
18	6245 7300	S button E238-7	E311792-6		1	C
19	6245 7310	S button E238-8	E311792-7		1	C
20	6245 7320	S button E238-9	E311792-8		1	C
21	6245 7330	S button E238-0	E311792-9		1	C
22	6245 7340	S button E238-.	E311792-10		1	C
23	6245 7350	S button E238-00	E311792-11		1	C
24	6245 7360	5 button E238	E311116-4		1	C
25	6246 7768	L button	E210963A-4		6	B
26	6246 7810	S button	E311101A-4		30	B
27	6247 3830	Coil spring A	E411104A-1		6	B
28	6247 3837	Coil spring B	E411104A-2		5	B
29	6247 6315	Button frame	E140119-1		1	X
30	6247 1478	Button filler 3S	E311197-2		1	C
31	6247 6343	Button filler 4S	E311265-4		1	C
32	6247 6350	Button filler 5S	E311265-5		1	C
33	6245 3530	Key contact rubber	E411877-1		36	A
34	6247 6364	Spacer	E340397-1		1	C
35	6247 6371	Common sheet	E340398-1		1	A
36	6248 0691	Keyboard chassis	E340412A-1		1	X
37	6248 0692	FPC	E240323A-1		1	A
38	6248 0843	Plate sub ass'y	E240421*3		1	X
		Screw with washer	3X8 ZMC-3		6	X
	5. Upper case ass'y					
39	6220 2505	Display bush E231	E310377-1		1	X
40	6247 6455	Upper case E245	E140123-1		1	C
41	6248 0871	Display case E247B	E140124-4		1	C
		Screw with washer	3X20 ZMC-3		2	X
	6. Lower case ass'y					
42	3200 3672	Motor	MXN-13FB12F		1	B
43	6191 0112	Motor connector ass'y	E311086*1		1	C
44	6231 6837	Winder rubber E222	E410716A-1		1	B
45	6000 6091	Battery spring G67	A43656-1		1	C
46	6193 3805	Battery connector ass'y	E311297A*2		1	C
47	6322 4499	Battery spring A-G55	A42606-1		1	C
48	6247 8821	Battery cover E245	E340406-1		1	C
49	3000 8001	Transformer	TE-297-E1U	Other countries	1	A
49	3000 8036	Transformer	TE-297-E2D	UK, Europe	1	A
50	3600 1046	Voltage selector	S-J2875-05	Other countries	1	X
51	3701 0242	Power cord	MP5004	UK, Other countries	1	C
51	3700 4283	Power cord	M3203	Other countries	1	C

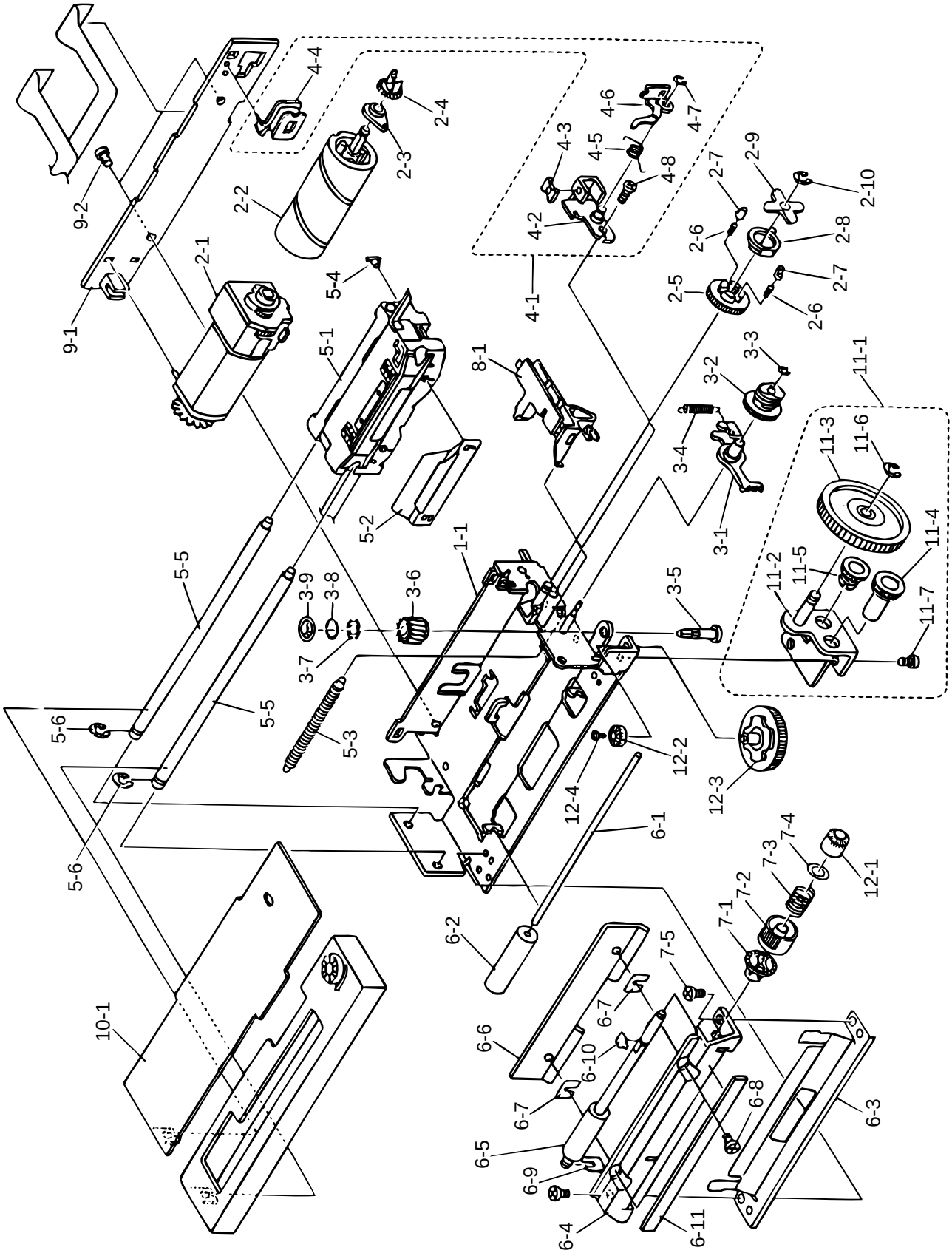
Item	Code No.	Parts Name	Specification	Version	Q	R
51	3700 4281	Power cord	PS204	Other countries	1	C
51	6221 4802	Power cord	M2511	Germany, Europe	1	C
52	6248 0396	Lower case E247	E140118-4		1	C
53	6248 0779	FG plate	E340646-1		1	X
54	6248 0873	Connector fixing plate E247	E340524-1		1	X
		Screw with washer	3X8 ZMC-3		7	X
		Tapping screw with washer	4X8 ZMC-3		1	X
		Screw with washers	3X6 ZMC-3		2	X
	7. Total Component					
55	6247 6483	Printer cover	E140120-1		1	C
56	6231 3668	Paper cutter	E42592A-1		1	C
		Printer fixing stand block				
57	6248 0403	Printer fixing stand	E140174-1		1	C
		Screw with washers	2X6 ZMC-3		2	X
		FG wire sub ass'y	E340653*1		1	X
		Screw with washer	3X8 ZMC-3		4	X
58	1090 5525	Printer unit	MD910SSC		1	A
59	6248 0704	FFC joiner F-E247	E440443-2		1	A
		E247-CNB board				
CN1	3510 7525	PCB connector	HBLB17S-1J		1	C
60	6248 0893	Connector sub ass'y (10P)	E340635*1		1	C
61	6248 0894	Connector sub ass'y (7P)	E340636*1		1	C
	3637 5230	Ferrite core	TR-25-15-12		1	X
62	6221 4029	Paper holding spool E227	E411393-1		1	C
63	6246 1830	Wind pulley E266	E311860-1		1	C
64	6248 0872	Connector cover E247	E340523-1		1	C
65	6248 0910	Key set sub ass'y	E312046A*2		1	A
66	6248 0298	Ribbon cover	E140175-1		1	C
	6247 8562	Dust cover E245	E240392-1		1	C
		Tapping screw with washer	4X8 ZMC-3		2	X
		Tapping screw with washer	3X8 ZMC-3		4	X
		Screw with washer	3X8 ZMC-3		1	X
		Bind screw	3X8 NI		2	X
		Screw with toothed lock washer	4 ZMC-3		4	X
		Flat screw	4X85 ZMC-3		1	X
		Flat washer	4X9X0.8 ZMC-3		1	X

8. Cash drawer (DL-2763)



Item	Code No.	Parts Name	Specification	Version	Q	R
	8. Cash drawer (DL-2763)					
	6247 9752	Cash drawer (DL-2763)	E440128A*14		1	C
1	6192 7953	Bill/Coin case ass'y	E140034*3		1	C
2	6247 3935	Coin case	E140058-1		1	B
3	6246 5230	Bill holder fixing plate	E211620-1		1	C
4	6247 3949	Coin separeter	E340173-1		6	B
5	6246 5220	Bill holder spring	E412160-1		4	A
6	6221 4902	Bill holder	ZD18931		4	A
7	6221 4911	Partition plate	ZD43652		3	B
8	6246 5030	Earth spring	E412092-1		1	C
9	5150 1643	Nut	6...		2	X
10	5500 0619	Roller	DR-19B1		4	A
11	6193 4567	Lock ass'y	E211680*9		1	B
12	6221 4900	Cylinder lock	ZD20025		1	C

9. Printer (MD-910)



MD-910

N	Item	Code No.	Parts Name	Specification	Q	R
	1-1	1904 7581	Frame	NC44701-07	1	X
	2-1	1904 7582	Gear box sub ass'y	NC10701-00	1	A
	2-10,5-6	1906 2087	E-Ring,2	E60320-00	3	X
	2-2	1904 7583	Cylinder cam	NC19701-00	1	X
	2-3	1904 7584	Bushing for cam shaft	NC21201-01	1	X
	2-4	1904 7585	Paper feeding gear	NC20201-02	1	B
	2-5	1904 7586	Gear for paper feed cam	NC20202-03	1	B
	2-6	1904 7587	Spring for cutter pin	NC23602-01	2	X
	2-7	1904 7588	Pin for cotter(PLS)	NC29202-02	2	X
	2-8	1904 7589	Ring for return	NC29203-01	1	X
	2-9	1904 7590	Cam	NC29201-03	1	X
	3-1	1904 7591	Sector gear	NC20701-01	1	X
	3-2	1904 7592	Worm	NC30201-01	1	X
	3-3	1904 7593	E-Ring, 1.2	E60312-00	1	X
	3-4	1904 7594	Spring for sector gear	NC23603-03	1	X
	3-5	1904 7595	Pin for ribbon drive	NC32201-01	1	X
	3-6	1904 7596	Gear for worm	NC30202-00	1	B
	3-7	1904 7597	Latch for ribbon drive	NC33101-01	1	X
	3-8	1904 7598	Spacer for latch	NC39101-01	1	X
	3-9	1904 7599	Nut	E40520-00	1	X
	4-1	1904 7600	PF solenoid	NC25704-00	1	B
	4-2	1904 7601	Core base	NC25702-02	1	X
	4-3	1904 7602	Core for PF solenoid	NC25102-01	1	X
	4-4	1904 7603	Bobbin	NC25701-00	1	X
	4-5	1904 7604	Spring for armature	NC25601-02	1	X
	4-6	1904 7605	Armature	NC25703-00	1	X
	4-7	1904 7593	E-Ring, 1.2	E60312-00	1	X
	4-8, 9-2	1904 7607	Screw M2x2.5	E01420-025	2	X
	5-1	1904 7608	Head	NC09701-05	1	A
	5-2	1904 7609	Ribbon mask	NC14102-05	1	A
	5-3	1904 7610	Spring for head return	NC13601-01	1	B
	5-4	1904 7611	Pin for shaft	NC12001-02	1	X
	5-5	1904 7612	Shaft for carrige guide	NC02001-03	2	X
	6-1	1904 7613	Shaft for pressure roller	NC22003-01	1	X
	6-10	1904 7614	Spring for brake	NC23102-02	1	X
	6-11	1904 7615	Damper for platen	NC04102-03	1	X
	6-2	1904 7616	Pressure roller	NC22201-03	1	B
	6-3	1904 7617	Guide for paper pressure	NC23101-02	1	C
	6-4	1904 7618	Bracket for paper feed	NC24201-06	1	X
	6-5	1904 7619	Paper feed roller	NC22501-09	1	C
	6-6	1904 7620	Platen	NC04101-02	1	C
	6-7	1904 7621	Spacer for platen (0.10)	NC04103-00	2	X
	6-7	1904 7622	Spacer for platen (0.05)	NC04103-10	2	X
	6-8	1904 7607	Screw M2x2.5	E01420-025	2	X
	6-9	1904 7624	Bushing for PF bracket	NC21101-05	1	X
	7-1	1904 7625	Wheel for clutch	NC20204-03	1	B
	7-2	1904 7626	Gear for clutch	NC20203-04	1	B
	7-3	1904 7627	Spring for PF clutch	NC23601-02	1	B
	7-4	1904 7628	Spacer for clutch	NC29102-00	1	X
	7-5, 11-7	1904 7607	Screw M2x2.5	E01420-025	2	X
	8-1	1904 7630	RP switch	NC68701-00	1	A
	9-1	1904 7631	PCB terminal	NC66702-00	1	C
	10-1	1904 7632	Cover	NC44102-01	1	C
	11-1	1904 7633	Vertical manual knob	NC29701-00	1	C
	11-2	1904 7634	Bracket (V)	NC29702-01	1	X

N	Item	Code No.	Parts Name	Specification	Q	R
	11-3	1904 7635	Knob	NC20208-01	1	X
	11-4	1904 7636	Gear for PF drive	NC20209-01	1	B
	11-5	1904 7637	Gear for idler	NC20210-00	1	B
	11-6	1906 2087	E-Ring, 2	E60320-00	1	X
	12-1	1904 7638	Gear A for knob	NC20205-01	1	B
	12-2	1904 7639	Gear B for knob	NC20206-03	1	B
	12-3	1904 7640	Knob	NC20901-05	1	B
	12-4	1904 7641	Screw M1.4x3.5	E12714-035	1	X